NATIONAL CAR BUILDER

VOLUME XIV.
NUMBER 10.

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

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OCTOBER, 1883.

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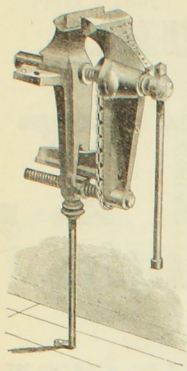

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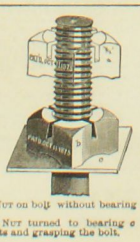

J. W. LARABEE,
Treasurer.

a, ATWOOD NUT on bolt without bearing on base slots open.
b, ATWOOD NUT turned to bearing e partially closing the slots and grasping the bolt.

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Patent Twist Drills, Machine Bits for Wood, Bit Stock Drills, Reamers, Standard Gauges, Milling Cutter and Special Tools, for use in Railroad, Car and Locomotive Shops. **NEW BEDFORD, Mass.**

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Flexible Vulcanized Fibre Dust Guards and Oil-Box Covers,
being absolutely unaffected by oil or heat, are far more durable and efficient than Leather, and much cheaper.

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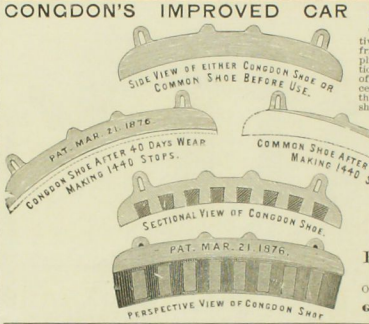

This shoe, while being more effective, in that greater uniformity of friction can be obtained when applied to the wheels of a train in motion without stopping the revolution of any till the train is at rest, exceeds in life, or the durability of the Shoe itself, that of the cast iron shoe by over seventy-five per cent.

Its durability, together with cheapness and simplicity of construction, recommend it in preference to any other in use

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HOT PRESSED NUTS.
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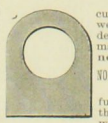

They are not affected by oil, grease or petroleum; do not cut the axles, as grit does not adhere to them; keep their shape well and will outwear several leather ones. Cut to order of any desired thickness or pattern. Send drawing or sample for estimate. This material is **absolutely free from grit, and will not become brittle and break.**

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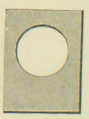

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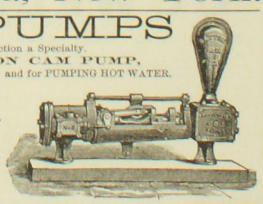

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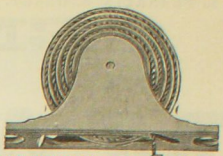

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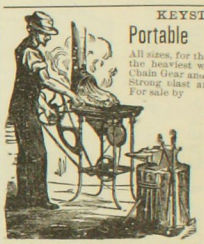

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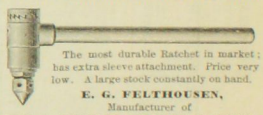

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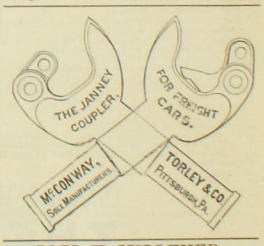

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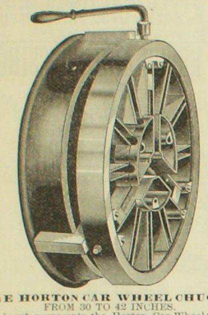

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This cut represents the Horton Car Wheel Chuck holding a car wheel in proper position for boring, the flange and tread of the wheel assuming a true position on the jaws.

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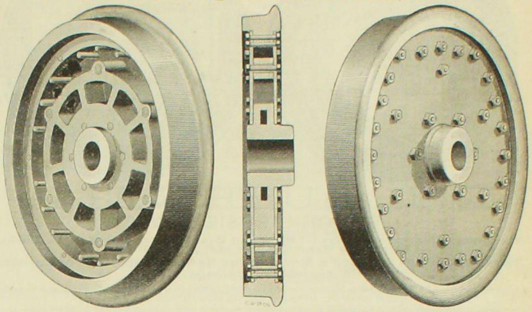

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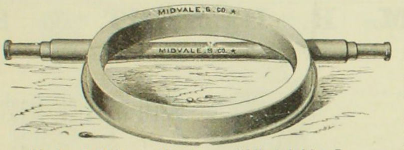

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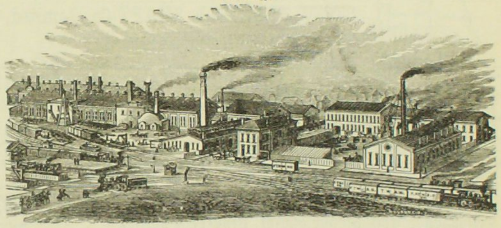

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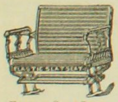

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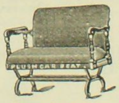

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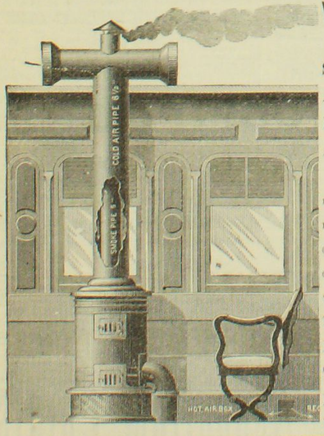

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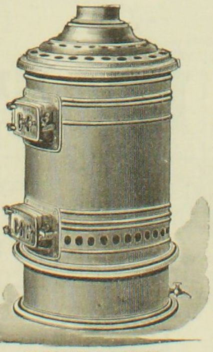

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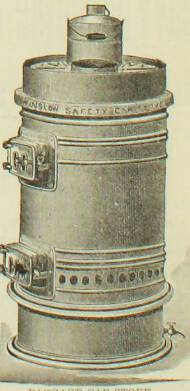

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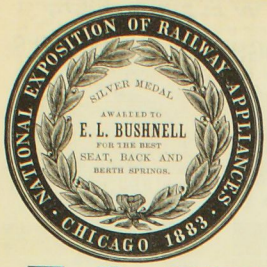

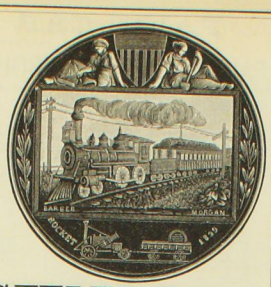

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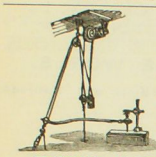

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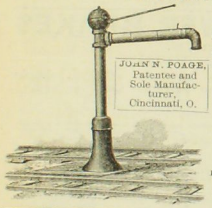

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The acts of closing valve, opening and closing waste, and returning to its position parallel to track, are all

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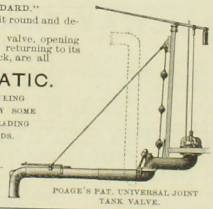

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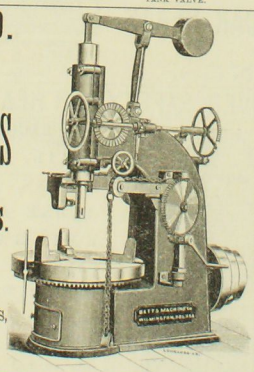

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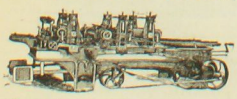

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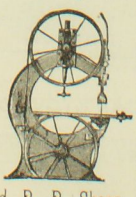

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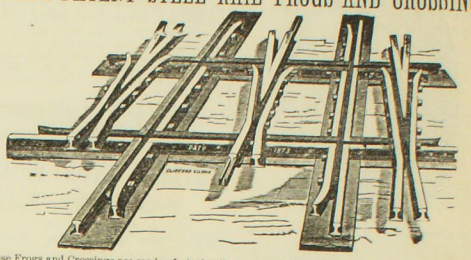
C. HUBBARD, Agent, 46 Cliff Street, New York.

ELLIOT'S PATENT STEEL RAIL FROGS AND CROSSINGS.



These Frogs and Crossings are made of steel rail, combined with a wrought-iron frame, and bound together transversely with strong bolts, which gives them great strength and durability without destroying their elasticity. They are connected at all ends by Fish-Plate Joints, and lie on the same tie surface as the running rail without any cutting of ties, thus saving a great deal of time and labor in putting in place on track.

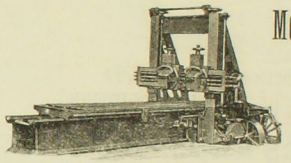
Manufactured by H. & H. ELLIOT,

East St. Louis, Ill.

WM. B. BEMENT & SON,

PHILADELPHIA,

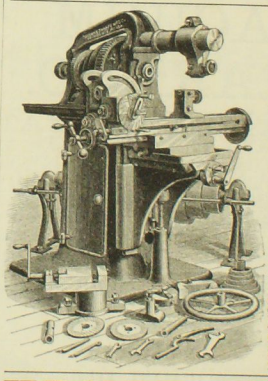
MANUFACTURERS OF



Metal Working Machine Tools

of all descriptions, and a great number of sizes, including

Steam Hammers, Steam and Hydraulic Riveters, Cranes, Punches and Shears, Bending Rolls, Plate Planers, etc.



BROWN & SHARPE MFG. CO.

PROVIDENCE, R. I.,

Manufacturers of the

UNIVERSAL MILLING MACHINE.

This machine has been designed especially to meet the wants of Steam Engine and Locomotive builders, and others engaged in the manufacture of heavy machinery and tools.

The essential features and motions are the same as in our smaller Universal Milling Machine, with such enlargement of the whole machine and its parts as would best adapt it for the class of work to be done. The cone has three diameters, each 3½ inches face. In addition, the cone is strongly geared, thus making six changes of speed. There are also the same number of changes of feed. The spindle boxes are of hardened cast steel and, together with the spindle bearings, are carefully ground, and are provided with means of compensation for wear. The spindle will carry a cutter arbor projecting 15 inches, which is supported by an adjustable center at the outer end. Cutters of 8 inches or less diameter can be used. The horizontal movement of the spiral clamp bed upon the knee, in a line with the spindle of the machine is 6½ inches, and the vertical movement of the spiral bed centers below the spindle centers is 11 inches. The spiral bed can be set at angles of 35° each way from center line of spindle, and can be fed automatically 22 inches, taking also 22 inches between the centers, and will swing 11¼ inches. ☞ Illustrated Catalogue sent per mail on application.

KRUPP COMPOUND.

THE STANDARD COOLER.

This compound as a cooler and lubricator for **Hot Journals** is unsurpassed.

Is best applied as a dope by mixing well with waste saturated with oil, and packing close to the journal.

E. A. SMITH & CO.,

P. O. Box 1,145. Pittsburgh, Pa.

NATIONAL PAINT WORKS

WILLIAMSPORT, PA.

ONLY MANUFACTURERS OF

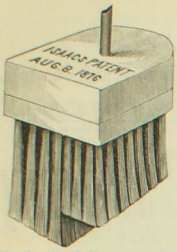
Asphaltum Paints

MIXED READY FOR USE.

IN ALL COLORS. Adopted and being used by many Prominent Railroads. Car and Bridge Builders in the United States. Using only the best Leads, Zincs, Minerals, proportion of Crude Asphaltum and all Coloring Materials, Ground in and Thinned with Pure Linseed Oil. Particular attention given to Railroad Car and Bridge Works Orders. Samples and Price-List furnished on application.

PHŒNIX STEEL WIRE BROOM & BRUSH CO.,

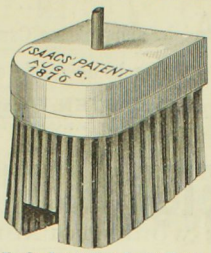
SUCCESSORS TO M. C. ISAACS & CO.,



No. 2.—Track Broom, Ordinary Size.

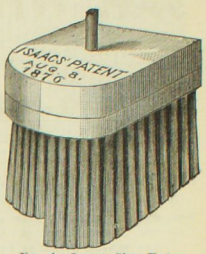
SOLE MANUFACTURERS OF

ISAACS' PATENT CELEBRATED



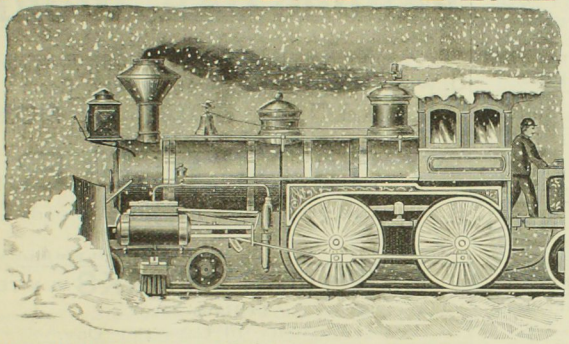
No. 3.—Large Size, Extra Heavy.

LOCOMOTIVE STEEL WIRE.



No. 4.—Large Size, Extra Heavy.

SNOW AND TRACK BROOMS.



This Cut represents the Locomotive in full speed, and shows the condition of the track after our Broom has passed over the rail. Any Roads that have not used the Track Brooms should not fail to order them and test their merits.

NOTICE.

Being sole owners of Letters Patented No. 180,717, granted M. C. ISAACS, Aug. 8, 1876, and we hereby caution all persons against infringing our exclusive rights by making, selling or using Railway Track Brooms like those covered by said Patent and illustrated on this page. All infringers will be prosecuted under the provisions of the Laws of the United States. See decision of Judges Clifford and Lowell, U. S. Circuit Court, Boston, Mass., Oct. 9, 1878.

All orders will receive prompt and careful attention by addressing

PHŒNIX STEEL WIRE BROOM & BRUSH COMPANY,

199, 201 and 203 Randolph Street, - - - - - - Chicago, Ill.

IMPORTANT TO RAILROAD MANAGERS, MASTER-MECHANICS, AND MILL-OWNERS.

GLOBE LUBRICATING OIL.

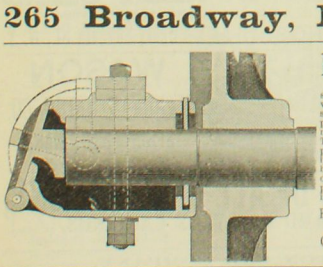
superior to any other Lubricant in use, and 50 per cent cheaper.

CORRESPONDENCE SOLICITED.

Trial Packages will be furnished and satisfaction guaranteed or no charge made for same.

Globe Lubricating Oil Co.,

265 Broadway, New York.



RAOUL JOURNAL BOX.

This box is designed to provide an end stop for the axle, and thereby dispense with the shoulder and collar, and at the same time not obstruct the process of packing the box. The journal may be made any desired length and diameter. The life of the axle is doubled. The expense of brasses and lubricants enormously reduced; end wear of brasses and hot-boxes obviated. It is now in successful operation on trucks of engines, tenders, passenger and freight cars. For further information address

RAMAPO WHEEL & FOUNDRY COMPANY
Ramapo, N. Y.;
Columbus Iron Works Company
Columbus, Ga.

Established 1852.

GEO. H. THACHER & CO.

Albany Car-Wheel Works.

CAR WHEELS AND Engine Wheels.

Albany, N. Y.

MANUFACTURED FROM The Best Brands OF CHARCOAL IRON ONLY.

BOUND VOLUMES OF THE NATIONAL CAR-BUILDER

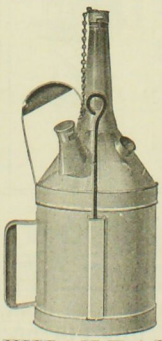
For 1880, 1881 and 1882.

Price, - - - $3 00 each.

NOYES'

Patent Liquid and Condensed COOLER.

For Cooling Railroad Car and Steamboat Journals and Bearings of all Kinds, and for Mixing with Other Oils.



The attention of those who are running heavy journals is respectfully invited to the above Liquid Cooler. It has been successfully used for upward of ten years, and is constantly growing in favor, as its merits become known, and we are confident that practical men cannot fail of being convinced that our preparation deserves their candid attention. What we claim for it is:

That it will Cool a Hot Journal When in Motion, and extinguish the flame when the box is on fire; that its use will, in a great measure, prevent the occurrence of a hot journal, and save the expense, delays and annoyances incident thereto; that it will eliminate the heat from a journal at a temperature greatly below the point required to melt the babbitt, preventing the accumulation of heat, and by a timely application save it from destruction; that its non-inflammable elements (where waste is used) permeate the waste and prevent its taking fire; that it keeps the journal smooth and polished, preventing unnecessary friction; that its combination is based upon true scientific principles, which renders it impossible to fail in its results, and is the

Only Preparation that will Cool a Hot Journal while it is in motion, as attested by certificates below; that one thorough application on a hot journal will do more execution in cooling than the constant application of water for half an hour, besides doing it evenly and without loss of time.

Every Railroad Train or Steamboat should have a can of the Liquid Packing on board, with the directions for its use pasted upon it, and thus have always at hand the means of effectually cooling a hot journal, and thereby avoid the expense, danger and trouble from this cause.

WHAT RAILROAD MEN SAY OF IT.

SALEM, Aug. 7, 1872.

MR. P. NOYES.—*Dear Sir:* I have been using your Liquid Packing for cooling car journals for some time past, and have been well pleased with it. I have had occasion to use it a number of times, under Pullman cars, and it has been a complete remedy in every case of hot journals.

Every train should be provided with it, as it is a saving of time and expense in the running of trains, provided it is applied and cared for according to directions for using.

Yours truly,
J. P. SOMERBY,
M. C. B. Eastern Railroad.

SALEM, Aug. 28, 1880.

I can recommend Noyes' Liquid Cooler as an excellent article to carry on trains for use in case of Hot Journals, which it cools, without injury to the journals, more effectually than anything I know of.

J. B. BILLINGS,
M. C. B. Eastern Railroad.

Our Liquid Cooler is now in use, and has been from one to eight years, upon the following roads, and we have numerous recommendations from them: Boston & Maine R. R., Boston & Lowell R. R., Intercolonial R. R., Boston, Concord & Montreal R. R., Fitchburg R. R., Eastern R. R., New York, New Haven & Hartford R. R., New York & New England R. R., Connecticut River R. R., Delaware & Hudson Canal Co., Old Colony.

BOSTON, April 7, 1880.

P. NOYES, Agent.—*Dear Sir:* Please send for account of Eastern Railroad five barrels Liquid Cooler.

GEO. J. FISHER, P. A.

BOSTON, May 24, 1877.

P. NOYES, Agent.—*Dear Sir:* Having used your Liquid Cooler two or three years, I find it necessary for the safe running of our cars to continue its use. When the cooler is mixed with black oil, according to directions, the compound is equal to lard or sperm oil, and it is the best Cooler I have ever used.

Yours truly,
JOHN F. CROCKERY,
Master Mechanic Boston, Lowell & Nashua R. R.

BOSTON, April 23, 1880.

BELT AND LEATHER STUFFING CO.—*Gents:* Please send to East Cambridge, for account Boston & Lowell Railroad, five barrels Liquid Cooler.

Yours truly,
F. H. NOURSE,
Purchasing Agent.

In ordering state whether it is desired for general Lubricating or Cooling. The Condensed is sold, especially for Lubricating, by the Pound, and the Liquid by the Gallon, as low as any article of the quality in the market.

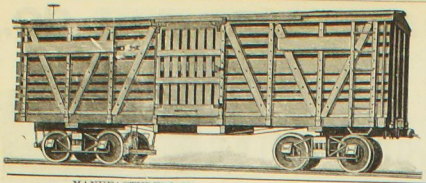
SEND FOR A BARREL. NO CHARGE UNLESS IT DOES ALL WE STATE.

MANUFACTURED BY THE

NOYES MANUFACTURING CO., P. Noyes, General Manager.

47 INDIA STREET, BOSTON.

We are sole agents for the Swift "Muffler" for Locomotives, Improved Car Axle-Box Dust Guard, and are Agents for the Ormsby Patent Car-Sash Balance and Lock.



LA FAYETTE CAR WORKS,

LAFAYETTE, IND.

Freight and Caboose Cars of all kinds. Hand and Push Cars.

Warehouse Trucks and Baggage Barrows. Car Wheels and Castings.

B. F. MASTEN, Prest. C. E. CORE, Supt.

MANUFACTURERS OF

CARS,

Car Wheels, Truck Wheels and Tender Wheels,

Hammered Car and Locomotive Axles and General Forgings.

Car Wheels Fitted to Axles.

Car Castings, Bridge Castings and Car Brasses.

Mining Cars, Mining Wheels, Etc.

W. H. BARNUM, President, Lime Rock, Conn.

F. E. CANDA, Vice-President, New York City.

E. ENSIGN, Secretary and Treasurer, Huntington, W. Va.

The Ensign Manufacturing Company

(CAR WORKS, FOUNDRIES AND STEAM FORGE).

DAILY CAPACITY, - - - - - - - - - - - 15 Box Cars, 250 Car Wheels, 80 Axles.

HUNTINGTON, WEST VIRGINIA.

WASON

CAR AND FOUNDRY CO.,

CHATTANOOGA, TENN.,

MANUFACTURERS OF

FREIGHT CARS, CAR WHEELS AND CASTINGS OF ALL KINDS.

BRADLEY CAR WORKS, WORCESTER, MASS.

ESTABLISHED 1833.

MANUFACTURERS OF EVERY DESCRIPTION OF

RAILWAY CARS.

OSGOOD BRADLEY, Proprietor.

WM. E. UPTEGROVE & BRO.

MAHOGANY

All Veneers and Cabinet Woods.

FRENCH BURL VENEERS

A Specialty.

SAW MILLS AND OFFICE, Foot 10th & 11th Streets, East River, NEW YORK.

Billmeyer & Small Co.

EXTENSIVE BUILDERS OF

PASSENGER, FREIGHT, MINING, CONSTRUCTION & OTHER CARS.

YORK, PENNSYLVANIA, U.S.A.

BLIND SHADE

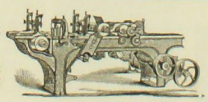
Planing Machine FOR CAR WORK.

The most perfect Machine in use.

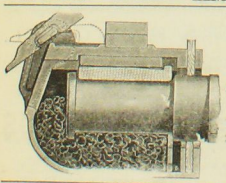
LEE'S PATENT

Molding Machines

Five different styles and sizes. These are especially adapted to all classes of car work.



HENRY A. LEE, Manufr 164 Union St., Worcester, Mass.



THE HEWITT BOX-LID CO.

142 DEARBORN ST.,

CHICAGO, ILL.

Eastern Office: Room 14, Fifth Floor, Mills Building, New York.

We respectfully refer you to the following railroads using the Hewitt Cover:

K. C., Ft. J. & C. B.; M. R., Ft. S. & G.; C., B. & Q.; C., A. & St. L.; A., T. & S. F.; A. & N.; K. P.; F. & P. M.; D., L. & N.; D. & R. G.; M. C.; H. & St. J.; C. & V.; St. L., I. M. & S.; D. & M. R. (in Neb.); D. P.; I. L. & G.; L. E. & W.; L. F. & C.; I. C.; O. C.; St. L. V. & T. H.; St. P. & S. ; N. P.; C. & E. I.; M. P.

MICHAEL SCHALL. S. J. SHOOP.

DAUPHIN CAR WORKS,

DAUPHIN, PA.

Freight, Coal, Dump, and Mine Cars. Capacity six cars per day.

I. N. PENNOCK. W. PENNOCK.

PENNOCK BROS.,

MANUFACTURERS OF

RAILWAY CARS,

MINERVA, OHIO.

PARDEE CAR WORKS,

WATSONTOWN, PA.

PARDEE, SNYDER & CO. (Limited), Proprietors.

C. W. LEAVITT, Agent, 161 Broadway, Room 2, N. Y.

ISAAC I. COLE & SON,

MANUFACTURERS AND DEALERS IN

VENEERS,

And Importers of Fancy Woods.

I. I. COLE & SON,

Foot of Eighth Street, East River, New York.

ERIE CAR WORKS (LIMITED).

ERIE, PA.

Capacity 16 Cars Per Day.

FREIGHT CARS OF BEST MATERIAL, AND CONSTRUCTION A SPECIALTY

GEO. C. KIMBALL, President. EDWARD HILL, Agent.

MUSKEGON CAR & ENGINE CO.,

MANUFACTURERS OF

RAILWAY FREIGHT AND PASSENGER EQUIPMENT

STATIONARY ENGINES AND BOILERS,

MUSKEGON, - - - - - MICH.

HARRISBURG

CAR MANUFACTURING CO.

MANUFACTURE

PASSENGER MAIL, BAGGAGE, BOX, GONDOLA, COAL

AND ALL OTHER KINDS OF

RAILROAD CARS;

Railroad Car Wheels and Castings, Bridge and Rolling Mill Castings, Bridge Rods, Bolts and

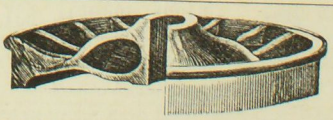
RAILROAD FORGINGS.

JOHN STEPHENSON CO., Limited,

STREET CARS

And Omnibuses.

47 East Twenty-Seventh St., N. Y.



WASON

MANUFACTURING CO.

SPRINGFIELD, MASS

BUILDERS OF

RAILWAY CARS OF ALL DESCRIPTIONS,

CAR WHEELS AND RAILWAY CASTINGS.

H. S. HYDE, Treasurer. G. C. FISK, President.

THE CANTON CAR COMPANY,

MANUFACTURERS OF

ALL KINDS OF FREIGHT CARS,

CAR, BRIDGE AND RAILROAD CASTINGS,

Capacity, Ten Cars per Day. CANTON, OHIO

Manufacturers of Cordrey's Patent Rotary Dumping Cars, Smith's Imperial Feed Mills, &c.

Repairing of all kinds promptly done.

GEO. KINGSLAND, Prest. F. GILLESPIE, Supt

CENTRAL UNION BRASS CO.,

MANUFACTURERS OF

BRASS CAR TRIMMINGS,

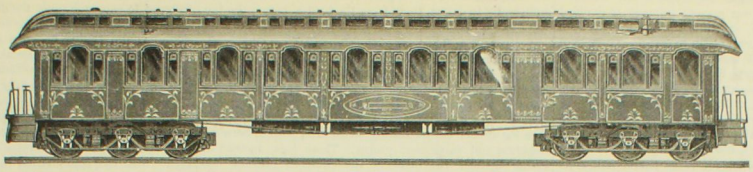
AND ALL KINDS OF

Brass Castings, Bronze, Babbitt Metals, Solder, etc. Brass Journal Bearings Specialty.

811 North Second St., ST. LOUIS MO.

Index to Advertisements in the National Car-Builder.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XIV.
NUMBER 10.

OCTOBER, 1883.

SINGLE NUMBERS, TEN CENTS.
$1.00 PER ANNUM.

Miscellaneous Items.

THE Georgia Pacific road is building new shops at Atlanta, Ga.

THE Lafayette (Ind.) Car Works are building 1,000 box cars for the New York, Chicago & St. Louis road, the cars to be completed by November 1.

THE shops of the Canadian Pacific Railway Company at Hochelaga are now almost completed, and the company already have a number of engines under way.

AT the Vincennes, Ind., shops of the Ohio & Mississippi road, five 18 × 24 in. cylinder passenger engines are under construction. They are similar to the Baldwin type.

THE Canadian Pacific Railway Company is about to build extensive car shops in Winnipeg, Manitoba, the intention being to build the freight cars for the road there.

JOHN C. TRAUTWINE, the eminent engineer, and the author of a number of standard works on engineering specialties, died in Philadelphia, Sept. 14, in the 74th year of his age.

THE Gill Car Manufacturing Co., at Columbus, O., have just finished 200 coal cars for the Pittsburg, Cincinnati & St. Louis road, and are engaged on 100 box cars for the Cleveland & Marietta.

THE Pullman Works in Detroit are now completing six handsome parlor cars for the New York West Shore Railroad, two sleepers for the Grand Trunk and eight sleepers for the Northern Pacific.

THE business of the Penfield Block Co., Lockport, N. Y., has not been retarded by the recent fire adjoining their works, which have twice been saved from destruction by the use of timely precautions.

THE Chesapeake & Ohio road has just received 250 grain cars from the Barney & Smith Manufacturing Co. The cars are 34 feet in length, and the road officers speak highly of their material and workmanship.

A PART of the extensive shops of the New York, Lake Erie & Western Railroad, at Port Jervis, N. Y., were destroyed by fire on the evening of Sept. 25. Several cars were also burned. The loss is estimated at $25,000.

THE foundations of the new shops of the Grand Trunk Railway at Fort Gratiot, Mich., are completed. The main building is 507 × 80 feet, and will contain a machine, erecting and blacksmith shop, also offices and storerooms.

THE Pennsylvania Co.'s lines, west of Pittsburg, are receiving some of the first of the 59 engines contracted for some time since; 18 of them are built at Altoona, and the rest at contract shops. They are all to be completed by Dec. 1.

THE car and tube manufacturing business of W. C. Allison, of Philadelphia, has been organized under the name of the Allison Manufacturing Co., with the following officers: President, W. C. Allison; Secretary, L. J. Piers; Treasurer, James O'Neill.

A NEW parlor car is in course of construction at the Cincinnati shops of the Cincinnati, Indianapolis, St. Louis & Chicago road. It is similar to those built for the same road from designs of Mr. J. S. Patterson, the Master Mechanic, and described some time since in the CAR-BUILDER.

THE Wason Car & Foundry Co., at Chattanooga, has temporarily reduced its usual force of men until the works can be put in first-class condition to meet prospective orders, which are likely to be very large. Mr. L. S. Young, formerly of the C., C., C. & I. road, is the Superintendent.

THE East Tennessee, Virginia & Georgia road company has built at Atlanta, Ga., and is now fitting up with new tools and machinery, what are said to be the most extensive railroad shops in the South, the old wooden shops being entirely inadequate for the present business of the lines.

AN exchange says that in the South peanuts are generally eaten raw, and that in this way they are much more wholesome and digestible than when they are baked. Railway passengers should make a note of this, and if they must eat these ugly things in the cars, always take them raw on the half shell.

THE Louisville & Nashville road has baggage, mail and express cars without platforms or steps, the cars resembling in their appearance an ordinary box with a deck roof. The object of this construction is to prevent tramps and others from stealing rides, and also from cutting into the ends of the cars in quest of plunder.

THE General Manager of the Northern Pacific road has appointed a Superintendent of Tree Plantations along the line, who also has one assistant. The other agents and officers of the company are instructed to afford all practicable facilities for the transportation and protection of plants and cuttings. This action is timely and evinces a wise foresight.

MR. O. CHANUTE, having resigned the position of Chief Engineer of the New York, Lake Erie & Western Railroad, Mr. H. D. Blunden, who has been for several years the principal Assistant Engineer on the road, has been appointed to succeed him. Mr. Chanute has gone to Kansas City, Mo., where we will continue his professional practice as civil engineer.

THE Columbus & Eastern, a new coal road in Ohio, has an order for 500 coal cars ready to be placed as soon as satisfactory bids are received. The Mason Machine Co., Taunton, Mass., is building ten 8-wheel engines for the road. Mr. J. Redfield, the President of the road company is an old railroad man, and is waiting for car-builders to get down to bottom prices.

THE Suspension Car Truck has recently been adopted by the Northern Pacific Railroad, and found to be a great improvement on the old truck in use. It secures easier motion and greater steadiness to the cars, and less jar in stopping. Its advantages are especially manifested in cattle cars. Stock shippers in the Northwest are giving it their unanimous approval.

AT a meeting of the stockholders of the Chilled Car Wheel Grinding Co., of Carson, Nev., the following officers were chosen: President, H. M. Yerrington; Vice-President, A. C. Ellis, vice Harry Hunter; and G. F. Ford, Secretary and Treasurer, vice C. P. Mason, resigned. John H. Hapgood was appointed General Agent, with headquarters at Grand Pacific Hotel, Chicago.

MR. E. SOULE, successor to the old Kimball Car Co., in San Francisco, has just completed four street cars for the Transcontinental Railroad Company of Portland, Or. These cars are supplied with the latest improvements, including sliding doors, money-boxes, etc., and for beauty of finish and elegance of design are said to be the finest ever turned out on the Pacific coast.

THE Litchfield Car & Machine Company are just completing 20 emigrant sleeping cars for the Texas Pacific. The cars are finished in plain woods. The seats face each other, and an upright post between them acts as a support or bearing for the upper berth when in use. This car embodies many decided improvements, and will afford the emigrant great comfort at small cost.

J. HARRIS & Co., Portland, St. John, N. B., are building twelve first-class passenger cars for the Intercolonial Railway, and a quantity of box and flat cars for the Nova Scotia Government Railway. The company make iron car wheels, their works having a capacity for 80 wheels per day; also the "Allston" steel tired wheels, for which they have the right for the Dominion of Canada.

THE citizens of Chattanooga, Tenn., have appointed a committee to purchase 25 acres of land to be presented to the Cincinnati, New Orleans & Texas Pacific road for the location of its principal shops, which will be fitted up with a view to the construction of all the rolling stock of the company at this point. The foundations of the division shops, at Meridian, Miss., are nearly completed.

THE American Brake Co. announce in a circular that a discount of 20 per cent. from the regular price of $15 per car will be made to railway companies contracting for entire freight equipment before June 30, 1884, and a discount of 10 per cent. for like contracts during the remainder of that year, but that thereafter no discount will be allowed. The brake apparatus will be delivered at St. Louis, Mo., f. o. b.

THE Pennsylvania Railroad Co. has had constructed an ingenious contrivance for loading and unloading articles of heavy weight, and for clearing away the *débris* of wrecks. The machine consists of an iron car and steam engine combined, with a crane for grappling any article and moving it wherever wanted. It will be especially useful in wrecks along the line, where ordinary appliances for effective work are not available.

IT is said that the Philadelphia & Reading Railroad Co. proposes hereafter to use on the road rails 60 feet long instead of 30, and will begin their manufacture at once. The rails will also be increased in weight from 68 to 70 lbs. per yard. The decreased number of joints to care for will lessen expenses, it is thought, but there are difficulties in the way of handling and transporting the 60-foot rails which trackmen will understand.

THE shops of the Little Miami Division of the Pittsburg, Cincinnati & St. Louis road, at Cincinnati, are very busy. A new passenger engine with 18 × 24 cylinders and 5½-foot drivers is under way, and four engines are in for repairs. The extension smoke arch is largely used on the road. In the car department, two passenger cars are being rebuilt, and a new caboose has just been finished. During the past year 14 coaches have been overhauled in the shops, and 40 freight cars have been built.

THE buffet cars of the Louisville & Nashville road, built at the Pullman shops, are finished inside in mahogany and gum wood. The chairs are placed in three rows, two on one side and one on the opposite side of the aisle, thus throwing the aisle to one side of the center. At one end of the car is the buffet, from which light refreshments can be ordered by passengers by means of an electric button opposite each chair between the windows. These cars, although somewhat of a novelty, are likely to become very popular.

TEN new passenger engines are building at the shops of the Philadelphia & Reading road. They will have Wootten dirt-burning boilers, 18½ × 22 cylinders, 68-in. driving wheels; diameter of boilers, 58⅜ in.; number of flues, 345; length of flues, 9 ft. 2 in.; outside diameter, 1¼ in.; inside length of fire-box, 8 ft. 6 in.; inside width, 8 ft.; grate area, 68 sq. ft.; heating surface in flues, 1,232 sq. ft.; heating surface in fire-box, 151 sq. ft.; total heating surface, 1,415 sq.; ft. wheel base, 20 ft. 5½ in.; weight on drivers, 60,780 lbs.; total weight of engine, 89,750 lbs.

THE French railroad carriages are the most uncomfortable in Europe. The seats are narrow, and the passengers are packed in them like herrings. In Germany and in Switzerland, on the other hand, the carriages are roomy and comfortable, and unless the French find means to remedy this state of things they will infallibly lose the through traffic between England and Italy. If they want to hold their own they should have carriages somewhat after the model of the Pullman palace cars, running through from Calais to Genoa. Nothing but dire necessity ever leads a sane individual to pass a day and a night in the present French carriage.—*London Truth.*

THE West Shore & Buffalo Railway, now open and running from New York to Albany, gives the tourist one of the most delightful trips imaginable. From Jersey City the route lies back of the Palisades, and suddenly emerging from a long tunnel near Haverstraw, a magnificent view is presented of the noble Hudson and surrounding country; thence, through the Highlands and fruit farms of Orange county, past the Catskills in full view, and on to Albany, the ride is an ever-changing panorama of beauty. The railroad itself is one of the very best built and equipped in the country, and travelers and tourists will find it a delightful new route.

MR. L. FINLEY, Master Mechanic of the Hot Springs Railroad, Arkansas, has patented an improved center-supporting curve-traversing car truck, of which he says: "I have had a car at work on this road for five months with one of these trucks under its center, which increases its weight-carrying capacity and will permit it to be lengthened out indefinitely on ordinary curved roads, thereby greatly reducing the dead weight of rolling stock to proportion of tonnage hauled. The improvement is such a complete success on this heavy graded and very crooked road, our grades running to 3 feet in 100 and curves to 24°, that I have lengthened the car from 23 to 34 feet. This car passes over grades and around curves with greater ease than the short cars."

IN the Introduction to Poor's Manual for 1883 it is said,

that "while it is not probable that we shall ever again witness the construction, in a single year, of 11,500 miles of railroad (as in 1882) such construction will continue steadily and rapidly until our present mileage is doubled in extent. There are now, or soon will be, four great lines traversing the continent from ocean to ocean. These lines render every portion of it accessible, and will serve as trunks from which branch lines will radiate in every direction. Included in the available area of the United States are 3,000,000 square miles. A ratio of one mile of railroad to 10 square miles of area will give 300,000 miles of line. Construction will proceed uninterruptedly until such an extent of mileage is reached."

THE Cincinnati, New Orleans & Texas Pacific road is receiving a number of eight-wheel engines from the Baldwin Locomotive Works. They are built from designs of Mr. James Meehan, the Master Mechanic of the road, have six-foot drivers and are intended for fast mail service between Cincinnati and Chattanooga. The distance between the two cities is 335 miles, which it is expected will be made in eight hours, or at the rate of 45 miles an hour including stops. A less rate of speed will of course be made over portions of the route in consequence of grades and unfavorable conditions of track, while from 55 to 60 miles an hour will be made on other portions. The track and rolling stock are in splendid condition and the road has already acquired a deserved repute for safe and fast running.

AT the shops of the Atlanta & West Point road, at Atlanta, Ga., a sleeping car and passenger coach are being overhauled and 40 new coal cars are under way. They are 31 ft. 8 in. long and have a capacity of 20 tons. They are built exclusively of southern pine. Three engines are also in for repairs, and a new boiler with extension front has recently been completed. Coal has been used on the engines of this road for 15 years and wood during 12 years previously, and although most of the engines have been in service 25 years, but one new fire-box has been put during that long period. The shops are temporary wooden ones, the original brick buildings having been destroyed during the war. The venerable Mr. J. T. Flynn, the Master Mechanic, has been in the service of the road 33 years.

THE Westinghouse Air-Brake Company has just concluded contracts with the Union Pacific, Central Pacific, Northern Pacific, and Atchison, Topeka & Santa Fé roads, for equipping all their freight cars and engines with air-brakes. The company has made a new departure in these contracts, and instead of putting the brakes out on royalty, as on passenger coaches and engines, they will sell them outright to the railroad company at $50 each. There are some 1,200 freight cars on the Union Pacific system, and it will necessarily take some time to supply them all. They will begin work first on the Denver & South Park Division, afterwards on the main line and branches, and finish with the Kansas Pacific division. The Westinghouse Company has now in use brakes on 14,000 engines and 55,000 passenger cars.

MR. WM. LOUGHRIDGE, of Baltimore, the well-known inventor of car brakes, recently tested at the Mount Clare shops of the Baltimore & Ohio Railroad a new method of governing the force applied to the brakes of a car, so as to avoid the sliding of wheels while retaining full breaking power on light or heavy cars. A passenger car and a coal-hopper, equipped with the improved apparatus, were stopped at a distance averaging within 150 feet when running at 20 miles per hour. The apparatus consists of a coil spring of fixed power attached to the brake-chains and connected by a rod with a stop-wheel at the platform floor. The spring is set at any desired pressure, and when that is reached the stop-wheel locks automatically, and no more can be applied. The apparatus can be applied to air as well as hand brakes.

THE Union Switch & Signal Company of Pittsburg have just received an order to fit up forty Pullman palace cars with their patent heating apparatus. This invention, which is owned by the Union Switch & Signal Company, is considered the best plan yet devised for heating railroad cars. Under each car is placed a furnace in which coke is used, the motion of the car when on the road puts the fuel into the furnace in proper quantities. Above this furnace is a small boiler in which steam is generated. The pipes leading from this boiler carry the steam through the car with proper curves, making the heat accessible at every seat. One peculiarity of this plan of heating is that there is no escape of steam after its condensation back into the boiler. In this way the same water can be used in the boiler for several weeks. It is thought that this invention will be adopted by all the leading railroads before long.—*Elevated Railway Journal.*

THE following is said to have occurred in a Western car shop last winter: A large exhaust fan had been erected to take the sawdust and shavings from the wood-working machinery. It had run during the summer very satisfactorily, but at times during the winter it would shake the entire building. As often as this occurred it had to be stopped, but after being allowed to stand still an hour or so it would sometimes go all right upon being started again, and sometimes it would not. After a while it was discovered that the trouble was caused by the freezing of shavings and chips from ice-coated timber to the fan arms or blades, which threw the machine out of balance by an uneven distribution of weight. If allowed to stand awhile when in this condition, the chances were that a change in the temperature of the shops would loosen the frozen chips sufficiently to detach them from the blades before the fan was started again.

A FOREMAN in the shops of the Chesapeake & Ohio road, at Richmond, Va., has designed a balance slide valve which has been in use for some time with highly satisfactory results. It consists of a square plate surfaced on the under side to a joint with the back of the valve, which is free to slide beneath it in the usual way. The plate is supported by a leg at each corner resting on the dead portion between the chest and valve seat proper. These legs, instead of fitting against the inside of the chest, to prevent end motion of the plate, allow of about one-sixteenth of an inch of end travel of the plate. This is done for the reason that the valve by its movement would wear away from the plate, and by giving the plate end motion, the face of the legs wear about as fast as the valve, and consequently follow down with the valve. This result is obtained in practice by increasing or decreasing the wearing face of the legs until they wear equally with the valve.

AT the shops of the C., C., C. & I. road, Delaware, O., two Woodruff sleeping cars have just been rebuilt. The platform hood has a downward curve, while the clear-story extends to the end of the hood in a curve to conform with modern designs. The ends of the cars are round, and this circle is extended inside, forming a smoking-room at one end and a toilet-room at the other. The water-closets are located between the walls of the toilet-room and the sides of the car. The end ventilation is arranged to allow an inflow of air through a fine wire netting on the under side of the hood, passing over the dome top of the toilet and smoking rooms down into the car-body proper. It is doubtful if satisfactory ventilation can be obtained by this arrangement, owing to the tortuous route necessary for the air to travel inside; the car is finished in mahogany, with bird's-eye maple panels. A canvass head-lining has been handsomely repainted and varnished, as well as the entire inside and outside of the cars, by Mr. B. Dettleback, the master painter. The standard color of the cars is Tuscan red.

GREAT attention is given to the English railway stations. At Shrewsbury, for example, a city of half the size of Hartford, Conn., or say 25,000 inhabitants, the station cost $500,000. Along the route a grade crossing is hardly ever seen; when it is, the gate is kept shut, except when some one wants to cross the track. Its normal condition is to be closed. Tunnels and bridges are frequent. Over these in many places ivies are grown and other climbing vines; and at many places the cultivation of flowers, stimulated by prizes offered by the companies, has been carried to an art. Crossing the tracks at stations is not feasible, and walking on the tracks through the country is forbidden. Look from the car window half a day and you see no one on the track except an occasional railroad employé. The whistle scarcely ever blows except at stations. The guard notifies the engineer that all is ready by blowing a shrill little whistle which he carries in his pocket. The engineer pipes a shrill answer from the locomotive whistle, and off you go, quietly and without the infernal bell ringing and leaping on the last car that we are used to.

IT is reported that quite a number of railway companies that are using the extension smoke arch, are annoyed by claims of patentees for infringement. These claimants, as a rule, belong to that class of patent pirates who are on the lookout for anything new on an engine, and especially for any thing originating with the master mechanic or his employés. When any device of this kind is discovered, they lose no time in applying for a patent on it, and if the application is granted, damages are claimed from the original inventor and user. In many instances, if the claim is not exorbitant, settlements are made by the roads in order to avoid the expense and trouble of litigation. We are informed that Mr. E. M. Reed, Vice-President of the New York, New Haven & Hartford road, used the extension smoke arch some 25 years ago, almost exactly as it is used to-day, and that it was also used on the Philadelphia, Wilmington & Baltimore road 35 years ago. It was also introduced some ten years since on one of the Indiana roads by Mr. Pulaski Leeds, now of the Louisville & Nashville. These facts have been brought out by the resistance made by a prominent railway company to an infringement claim, and it hardly need be said that this field of adventure will not be an inviting one in the future.

THE buffet cars, built expressly for express train service on the New York, West Shore & Buffalo Railway, along the west shore of the Hudson River, are so called because they are provided with a "buffet" or sideboard, which occupies a space eight feet by three and a half, and is situated immediately in front of the smoking room. The front of this cosy inclosure, facing the drawing room, is plate glass, partly screened by rich drapery. The finish of the "buffet," in both wood work and marquetry, corresponds with the interior of the car, and the effect of the design is highly pleasing, suggesting, as it does, in convenience and luxuriousness an elegant sideboard in a richly appointed mansion. The perspective, looking from the main saloon, is one of harmonizing effect. From this elegant sideboard, which, in addition to the necessary fixtures in miniature, contains shelves for a circulating library, will be served to such as may desire it a delicate luncheon, such as a cup of French coffee, tea, a sandwich, or a cup of bouillion. This innovation, the conception of which originated with Mr. George M. Pullman during a recent tour in Italy, is not designed to encroach upon the dining car, the hotel car or the eating station; but, on the contrary, is intended to satisfy a vacuum arising between meals, or, in other words, to relieve faintness before breakfast, or slight hunger between meals, or, as it may often happen, to afford a delicacy for such passengers as may be too ill to leave the car.

TWO very handsome sleeping-cars are in course of construction at the shops of the Central Railroad of Georgia at Macon. They are finished in mahogany and walnut burl, and are painted Pullman color outside. These, together with two combination mail and baggage cars, are from the designs of Mr. James A. Knight, the Master Car-Builder of the road, and are not excelled in excellent workmanship by any cars of the kind in the country. The mail and baggage cars have yellow pine siding. The shops have also just turned out fifty new box-cars. In the locomotive department three engines are in for repairs. Mr. D. M. Gugel is the Master Mechanic. The road has in service some of the oldest locomotives in the country. They were built in 1853 by the Rogers Locomotive Works, and have 12×20 in. cylinders, are run on light passenger trains, and considering their dimensions, perform a great deal of work. Six new 16 × 24 Baldwin engines are expected soon. Wood fuel is used exclusively on engines, and the repairing or renewal of fire-boxes or flues is quite an unheard of thing on the road. A steam-hammer, built by the company upward of twenty years ago for use on war material, is still in use at the shops, and cuts off or welds a car axle with a dispatch which rivals very successfully the capacity of a Sellers hammer which stands near it. On the freight-cars of the road there are no hand-brakes, the trains being held by the caboose and tender brakes. A bell cord runs from the engine to the caboose, through open top-loop eyes attached to the running-board of each car.

THE shops of the Georgia Railroad, at Augusta, Ga., are fairly busy. In the car department two passenger coaches, designed by Mr. T. M. Preval, the Master Car-Builder of the road, are in process of construction. They are built throughout of selected Georgia pine, and are 51 ft. 7 in. long by 9 ft. 10½ in. over sills. The style of trussing is a little peculiar. A strip of ¼ × 2 in. iron is bolted to the outside of the belt and runs its entire length. About four feet from each end of the car body, the iron strip is bent at an angle downward and fastened by a swivel-joint to a bolt extending at the same angle through the side sills at their extreme ends. Truss-rods are used beneath the intermediate sills, and Mr. Preval thinks that although many roads are doing away with these rods for appearance sake, they are nevertheless of great utility. If they served no other purpose, they would prevent a truck, should it break loose from sliding back under the car and breaking in the sills and floor. These cars will be finished in walnut and ash, and when completed will not be surpassed in any respect by those of the same class built at northern shops. Two sleepers are in for repairs, and a new 50-foot postal car is under way. Wood head-linings are not in favor, mainly because they are apt to buckle and bag out of shape in case a leak occurs in the roof. Twenty narrow-gauge cars have just been completed for one of the branch roads. They have 4 × 8 inch journals, and a rated capacity of 32,000 pounds. In the locomotive department three engines are being overhauled. The shops have recently received a new Bement wheel lathe and a Brown & Sharpe 12-inch lathe. Mr. John S. Cook is the Master Mechanic.

AT the Louisville, Ky., shops of the Louisville & Nashville road, four consolidation engines, with 20 × 24 in. cylinders and Belpaire boilers, are under construction. These boilers, as is generally known, differ from the ordinary locomotive boiler in having a square fire-box, crown-sheet and roof-sheet, the crown-sheet being stayed to the flat roof-sheet by stay bolts. The engines are built from the designs of Mr. Reuben Wells, the General Master Mechanic of the road. The dome is just forward of the fire-box and is strengthened by a flange on the boiler shell extending up into the dome, and to which it is riveted. The opening for the dome in the shell is protected by two 2-inch square bars bent and riveted to the circle of the boiler in front and back of the opening. Four engines are in the shops undergoing repairs. Ten new 50-foot passenger cars have just been completed. They are finished in gum wood with raised panels of black walnut. A good deal of the usual superfluous ornamentation has been omitted, with a view to simplicity and plainness and ease of cleaning. Four passenger cars are being rebuilt, and twelve coal derrick cars are under way. These latter are to be used for coaling engines, the system involving the storing of the coal on the ground or in bins, and a traveling car fitted with a crane for loading the tenders therefrom. Work will soon begin on fifty new stock cars. In overhauling head linings, the Assistant Master Mechanic, Mr. P. Leeds, makes use of a stenciling process by which repid and effective work is done. The shape of the ornamental design is cut out in a piece of tin, and similar openings for the shaded portions are also cut in the same piece, by which means the general outlines and the heavy shades are laid on mechanically. The blending of the shades is then done by hand on the removal of the stencil. As an illustration of the economy and effectiveness of this method, a head-lining is exhibited

which in appearance is in all respects equal to the high-priced Eastern ones, but the painting of which cost only $12. Mr. Leeds is also using an arrangement of dies under his steam hammer for making links and pins, which results in a saving of half a cent a pound on the purchasing price.

THE time was midnight and the situation near the *World* office. The man was fearfully and wonderfully full. He walked up to the fire-alarm signal-box and placed a nickel in it. Then he sat down on the curb.

"Why don't the car start?"

He received no answer.

"Why don't the car start?"

Still no answer.

"Gimme back me fare, then!"

It was not returned.

Then he jumped up, grabbed the telegraph pole around the waist, and attempted to trip it up. There was a spirited tugging for several seconds, and then he made a terrific kick at the "feet" of his adversary, and the result was that he kicked himself over on his own head.

As he was excutivized himself he moved off, saying:

"Yer a smarter conductor than I thought yer wuz, but I believe now that I'd a throwed yer if yer coat hadn't come off."—*New York World.*

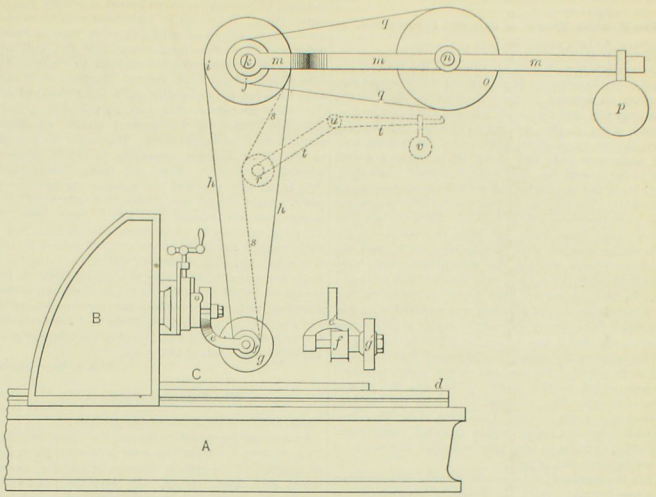
Japanese Railways.

A correspondent of the Boston *Transcript* gives the following account of a trip on the railway between Kanagawa and Tokio, the distance being 18 miles:

Trains are running between the two stations every hour and a quarter during the day, leaving both stations simultaneously. The whole equipment is English. The cars are divided into three classes. Even the first-class cars are decidedly plain. These are divided into three compartments. The second-class cars would hardly be used on a horse railroad in Boston. They are as plain as plain can be, and made just like a horse-car, having two long seats on the sides facing each other. The seats are upholstered with the same kind of matting which the Japanese use on their floors. The third-class cars have simply plain benches for seats. The exterior of all three classes is the same. The engines are smaller than the shifting engines in the Boston depots. The time required for the 18 miles' ride is 57 minutes. Every thing pertaining to the road is kept in the best condition. The road-bed is like a floor; the cars are clean; the stations are clean; all the officials are uniformed. I never knew one of them to be in any way impolite. Passengers are not allowed to cross the track except by the bridges overhead. Following English custom, the trains run on the left-hand track. No baggage is allowed to go free, save such as one can take in his hand. You can take no living thing into the train, not even a canary, without paying an extra price. Posted up in the stations is a notice to the effect that the Government does not run its road for the transportation of dogs, but if dogs must travel provision has been made for them. So every station is provided with boxes, latticed on top, in which poodle or mastiff can be transported for a definite sum. I understand that when it is necessary to transport a dead body an extra car is put on for the purpose.

Let us start on our 18 miles' ride from the Tokio station. It is a fine, large building built of stone, having two large entrances in front. The waiting rooms are furnished with the daily native and foreign papers. Five minutes before the train starts a warning bell is rung. The ticket office is styled a "booking office," and a notice tells you that you must be "booked" before you can enter the train. Just before the train starts the bell is again rung in the station and the doors closed, so there is no possible chance for a belated passenger to "run for the train," and possibly get run over by the train. There are no side doors, either, through which you can dodge the official. Having booked yourself, or purchased your ticket, you are allowed to pass through a very narrow passageway to the outward-bound train, showing your ticket as you pass. Although there is no gold leaf or bird's-eye maple on the cars, there are other arrangements that more than compensate for this loss of elegance. One of these is that by buying a round-trip ticket to any station you get a discount of 50 per cent. on return ticket—tickets good for one day only. Fare to Yokohama, first-class, $1; round-trip, $1.50; second-class, 60 cents; round trip, 90 cents. No official goes with the train; no brakeman in dulcet tones whispers out the name of the next station. The only brake on the train is on a car made specially for that purpose, and attached to the rear of the engine. No conductor shouts, "Tickets, please," and when he has finished his rounds sits down by the fair miss who goes daily for her music lessons. Every passenger is expected to enter the class car for which he holds a ticket. If he doesn't do this and he is found out, there is a penalty for his misdemeanor.

When it is time for the train to start, an official on the platform blows a little whistle, the steam engine blows a shrill whistle, which would be terrific if it were only powerful enough, and off we go. And now we see one advantage over the average American railroad—there is not the slightest jerk in starting; indeed, you never know when you are really in motion unless you look at objects outside the window. The train glides (that just expresses it), not swiftly to be sure, for if it were swift, probably the Japs would condemn it. Nothing upsets a native like swiftness—time is no object here.



DEVICE FOR GRINDING CASE-HARDENED GUIDE BARS.

In the overhauling of an engine with case-hardened guides, the job is often found to be tedious and difficult, especially if the guides are very much worn. The usual method in shops where there is no grinding table, is to grind down the high spots upon an ordinary grindstone, and this necessitates the holding of the guide-bar by hand, with frequent reference to a surface plate.

The engraving illustrates a very effective device for doing this work, as well as for trueing up steel or cast-iron guide-bars, nuts on a mandrel, or any flat surface that is required to be exact and true. *A* is the bed-plate of an ordinary planer, *B* the housing, *C* a guide-bar which is fastened to the table of the planer *d*; *e* is a wrought-iron frame carrying an emery wheel *g* and pulley *f*. This frame is held in the tool-post of the planer the same as an ordinary tool. In the small detached drawing, *e*, *f* and *g* have the same significance as the same letters in the larger drawing. On the counter-shaft *n* is hung or pivoted the frame *m*, which is either double or has a fork in one end to receive the pulleys *i* and *j* and the shaft *k*, the weight of which, as well as the pull of the belt, is over-balanced by the weight *p* on the opposite end of the frame.

The planer bed being dogged to carry the guide-bars full length under the emery wheel, the same in fact as if a cut were to be taken off by an ordinary tool, the emery wheel is started up and lowered until it commences to touch the guide-bars. The cross-feed is thrown in and the wheel fed across the face of the four guides. When reduced to a true surface, a finer and finally a polishing wheel is mounted to finish the work. It will be seen that the frame *m* pivoted to the shaft *n* allows the shaft *k* and its pulleys to be raised and lowered with the emery wheel. Another arrangement for this purpose, which may be preferred, is shown by the dotted lines. In this arrangement the shaft *k* is carried in ordinary hangers, and the adjustment of the emery wheel is provided by the extra length of belts *s*, and the tightener pulley *r*, carried in the frame *t*, which is pivoted at *u* and kept in position by the weight *v*.

We have seen the same idea applied to a compound planer or shaper, the emery wheel frame *e e'* being held in the tool-post, and allowed to travel back and forth across the guides by either of the belt arrangements shown. The pulley shown in this engraving has a broad face to allow the belt to travel with the emery wheel as it is fed across the work. It is certainly one of the best and cheapest tools a locomotive repair shop can have.

Operating the New York City Elevated Railroads.

No other city in the world is so effectually, safely and comfortably supplied with the means of rapid transit as the city of New York. The service of trains throughout the Manhattan Elevated Railway is remarkable for accuracy and exemption from serious accident or troublesome delays. No other system of fast city travel, with frequency of trains, can show an equal record for safety and regularity.

The Manhattan Company's lines comprise 32 miles of double track and 80 miles of single track. Upon this structure 240 locomotives are employed to run what averages 3,500 trains each day. A mileage equal to circumnavigating the globe is made every day of the week. About 25 stops are made in each trip, and there has been no single brake failure recorded in six months. The duration of stops at stations averages about 15 seconds. Trains run at intervals varying from a minute and a half to eight minutes, according to the hour of the day and the division of the road. Over 86,000,000 passengers were carried last year, and as the business steadily increases it is expected that the number will aggregate 100,000,000 this year.

To perform this enormous business with the surprising immunity from accident which has marked the history of the company, an excellent system of operating is essential. This is supplemented by the employment of first-class men, by using the best of machinery and material, and by following a method of thorough inspection.

The whole of the trains are run by card time, and each engineer is held responsible for the safety of his train, the approach to stations and curves demanding constant care and caution. Signal discs or lanterns, carried in front of the engine, denote to switchmen the destination of the train. At the end of each trip the engine is thoroughly inspected by the engineer, and at headquarters a competent machinist is employed for inspecting every part of the engine with the most searching minuteness. All the running gear of the cars is constantly subjected to a similar system of recurring examination. By this means accidents are almost unknown, for the small defects which pave the way for breakage are detected in time and the remedy applied.

The greater part of the locomotives have double crews, each set of men being required to work about eight hours. Each engineer is responsible for the care of his engine during the time he is in charge, and the work of packing, etc., is divided between the two crews. At the end of each trip the engineer makes a written report of the condition of the engine; and if any repairs are needed, they are at once attended to. As the engineers do not like to miss anything which is likely to be found by the inspector, they pay strict attention to the examination of their engines. The object of the greatest solicitude seems to be the brake gear. The Eames vacuum brake, which is used on all the rolling stock of this company, appears to be thoroughly reliable and prompt in action. The part most liable to fail is the rubber vacuum cylinder, which is never allowed to get worn out before being changed.

The engineers employed on the Manhattan Railway are all promoted from firemen. They are divided into three classes, and are paid accordingly. The first class receives $3.50; second class, $3.25, and the third class, $3 per day. Firemen are divided into two classes, and are paid $2 and $1.75 respectively. An essential requisite for a fireman being eligible for promotion is steadiness and good conduct. Before being intrusted with the care of an engine, he is required to pass a examination, where his knowledge respecting the locomotive is ascertained. He is questioned regarding combustion, the action of steam in the cylinders, and the construction and operating of the vacuum brake. As a practical test of his knowledge, he is requested to state what he would do in case of certain accidents happening to the engines. The firemen generally pass through this ordeal satisfactorily, and it is considered a benefit to the men in making them think. The fact that such an examination has to be passed on the way to promotion, is an incentive to the attainment of accurate knowledge.

On the ordinary run of elevated railway service a locomotive runs about twenty months, making a mileage of 100 miles each day before needing to go into the shops for a thorough repair. The engines are taken one day each month for washing out and small repairs. Fires are never drawn, except when the engine goes in to be washed or repaired.—*American Machinist.*

THE Raoul journal-box is almost exclusively used on Southern roads, and is highly spoken of by master mechanics and car-builders.

Communications.

The Relative Weight of Cars and Locomotives.

To the Editor of the National Car-Builder:

When railroads were first introduced in this country the weight of the locomotives used on them was a serious consideration on account of their destructive effect on the permanent way, and capitalists who put their money into railroads were on this account somewhat apprehensive about the safety of their investments. Although those early roads were rude and cheap affairs compared with those of the present day, they were considered too expensive to build and be crushed out with heavy engines and a light traffic. The engines seemed vastly out of proportion to the loads they were able to handle. While the cars with their ordinary loads made but little impression on the track, the locomotives were very severe upon it, and the cost of the repairs worried the stockholders, who very naturally thought the engines were heavier than was necessary, In time, however, they began to realize the fact that a certain amount of adhesion was required, also fire-space and boiler capacity sufficient to supply a certain area of piston, and that it was impossible to reduce the weight without reducing the capacity. Increased traffic necessitated more powerful engines, and as the power increased tons were added to the weight. This was the natural course of things. The locomotives must do the business, and they were made heavier. Cars were at the same time increased in number rather than in carrying capacity and were added to trains to keep pace with the motive power and the requirements of traffic.

While the standard load for eight-wheeled cars remained at ten tons for many years, the weight of locomotives was doubled. But the end was not yet. In the mean time permanent way was not improved to such a degree as to render it capable of supporting the weight of these monsters, and the evil complained of thirty years ago has not yet been removed. It is true that of late the condition of our roads has greatly improved, and the damaging effect of excessively heavy locomotives is not so apparent to superficial observers as formerly; but the repair and renewal accounts will bear witness, when compared with earnings, that the evil under consideration still exists, and as a measure of economy it is here suggested that the carrying capacity of cars be increased so that the weight of the car and its load will nearly or quite equal that of the locomotive. A move has already been made in this direction, but in a feeble way. Cars loaded with thirty tons have been safely hauled thousands of miles as an experiment, their weight being but little more than the nominal standard. The figures giving exact weight and dimensions of details are not at hand, but these experimental trips have shown conclusively that it is not only practicable but advisable to inaugurate a departure from present usage, and carry heavier car-loads and reduce the number of cars in the trains. A few years since railway managers tried to economize by hauling longer trains, thereby reducing the number of locomotives and crews. Their expectations were realized in a saving in the wages of train men, but it required, as was thought, more powerful and heavier engines, which aggravated the evil; and as the draw-tackle was unsuited to the rough usage incident to the handling of very long trains, together with the frequency of breakages and other accidents, it became apparent that there was no economy in the hauling of long trains of light cars by unreasonably heavy engines.

It is a waste of money and material to put track in a condition to resist the strains and the wear and tear of "Mastodon" engines, and then stock the roads with cars of only ten or fifteen tons capacity. To keep the permanent way in a serviceable condition is the greatest difficulty to be surmounted in successful railway operation; and how to get paying freight over the road with the least injury to the track is the one great problem for managers to solve, leaving fuel, wages, and ordinary repairs to rolling stock as secondary considerations. A train of 45 cars with a load of ten tons each—and this is a common load—makes a train load of 450 tons of paying freight. On such a train there are 360 wheels, each one of which tells upon rails and track fixtures in the way of abrasion and lamination. A train of 15 cars loaded with thirty tons each makes the same train load of paying freight (450 tons) with 120 wheels, or 240 less than the train of 45 cars. This relieves the track of 240 destroying agents, and the engine of no inconsiderable amount of train resistance, both of which, being interpreted, means dollars and cents.

Now, as to the first cost of cars, we will assume that the 45 ten-ton cars cost $600 each, or $27,000 in all, and that the 15 thirty-ton cars cost $900 each, or $13,500 in all, or just one-half what the 45 cars cost. There would also be a gain in the proportion of paying load to dead weight, and a saving of at least fifty per cent. in car repairs. To this may be added the saving in yard room and side tracks, which would be about 960 feet to each train reduced in length as above suggested, a saving also in switching and yard work, a greater convenience in handling freight, a saving in oil and waste, interest on first cost, salaries of car accountants, etc., all of which is set forth as substantial reasons for a change to heavier car-loads and shorter trains. It is not expected that cars will ever be made to carry loads approximating the weight of some of the monster locomotives of recent build, as that is both impracticable and undesirable. It is believed that the limit of economy has been passed in adding weight to locomotives. The record of performances is by no means creditable to engines exceeding 35 or 40 tons in running order, and some of the most remarkable and only really satisfactory performances are credited to engines of less than 40 tons weight when empty. Engines of 50 and 60 tons, however, are becoming quite numerous, and as for the 90-ton mastodons, they may do tolerable service on mountain grades, but for general service on ordinary roads there is no use for them. They may be compared to the Great Eastern steamship, which is admirably adapted to certain kinds of ocean transportation, but is wholly unsuited to general navigation purposes. Aside from the destructive effect of heavy locomotives on permanent way, they are short in their earnings as compared with lighter and less costly engines, and as the proper study of railway managers is to reduce the cost of transportation, the foregoing suggestions may not be unworthy of consideration. In bringing the weight of a loaded car up, or nearly up, to that of a locomotive, the space between the trucks may be utilized, and a portion of the load let down and carried within a few inches of the rails, thus lowering the center of gravity and serving as a ballast to the car.

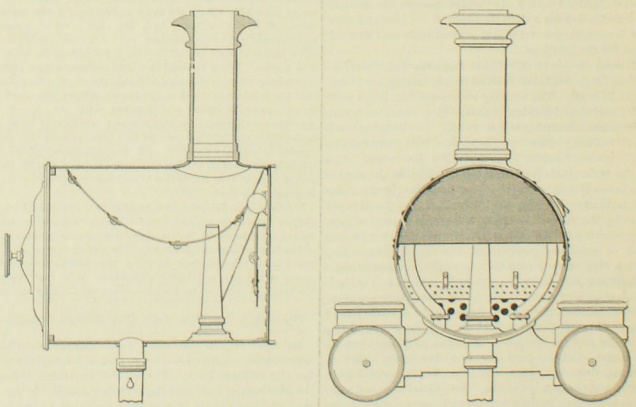
WM. S. HUNTINGTON.

The Extended Smoke Arch.

To the Editor of the National Car-Builder:

I was much interested in reading the communication of "Locomotive Engineer" in your September issue, giving an account of his ride to Chicago behind the extended smoke arch spark-arrester. He says the engine threw sparks and cinders, and he consequently does not believe in the utility of the device. No doubt he has run or ridden behind engines that did not steam well. Does he, then, say that no engine with this arrangement will steam well? Perhaps he was prejudiced in advance against the extended fronts, or perhaps he did not like the looks of them, which seems to be the chief objection with many engineers. I heard an old fogy say not long since that he did not like them because they made an engine look like a peanut-roaster.

Now, I have run the "long front" with both hard and soft coal-burning engines. I have also run the old diamond stack engines upon hard, heavy grades on the Alleghany Mountains, where I could not venture to put my head out of the window without endangering my eyes, and my overalls looked as if they had been exposed to the musket balls at Seven Oaks, that your correspondent speaks of, and my experience is that the extended front, if rightly constructed, is a decided improvement upon the old style. I do not say that they will entirely prevent the throwing of sparks. They will throw some when the front is nearly full and needs cleaning out, and a few can very likely be seen in the night time, but they go so high they will not hit a smoking car, nor can any be found on the run-board. The "front" of the engine to which your correspondent refers must have been imperfectly constructed, or perhaps the netting was too coarse or nearly worn out.



EXTENDED SMOKE ARCH SPARK ARRESTER.

The drawings I send you to be published with this communication will give you some idea of the spark-arrester as used here on Eastern roads. In front of the flue sheet is a diaphragm sheet which is set about four inches away from the flue sheet at the top. They are sometimes run down on a vertical line, and some bring them out farther at the bottom. There is a leaf on the bottom of the sheet which can be moved up or down to regulate the steaming of the engine. Some builders connect this leaf outside the arch and run the connection into the cab, to be shifted according to the working of the engine. They also put a square patch in front of the netting, which can be removed to get at the nozzles. I think, however, that this last is unnecessary, as the nozzle can be cleaned from the top of the stack by means of a piece of iron, forged flat and taper-welded to a bar of round iron with a handle on top.

Some have an arrangement to clean the front by blowing the sparks out with steam, but this makes complications and the pipes get to leaking, which cokes the sparks. They are sparked here by putting a small hoe on the hand-hole on the left side of the arch and poking them out through the pipe at the bottom. The nozzle of a hose pipe is inserted in the pipe below, and the water turned on, which does away with the dust. The engine is sparked only at the end of the road divisions, and it takes about five minutes to do it with an arch of fire brick in the fire-box, and which ought always to be used with the extension arch. I have ran a passenger train of five cars 160 miles without sparking, and then taken out perhaps eight or ten bushels of sparks. I have run 25 or 30 freight cars 70 miles, and worked the engine from 9 to 15 inches day in and day out, without ever sparking on the road and without throwing any sparks to speak of. If this can be done here with our fine coal, it ought certainly to be done in the West with their lump coal. I would advise "Locomotive Engineer," instead of talking his Master Mechanic out of the notion of long fronts, to talk him into it, and get one of them on his own engine. If it is made any where near right he will have plenty of steam, and will not burn up the country with cinders, nor get a hot clinker in his shirt bosom every time he puts his head out of the window.

SHAWMUT.

A Proposed Substitute for Dead-Blocks on Freight Cars.

To the Editor of the National Car-Builder:

In the category of unsatisfactory freight car attachments, dead-blocks, or "man-killers," as they have been very appropriately called, figure conspicuously on account of their apparent necessity, and also on account of the innumerable casualties that have resulted from their use. Their purpose is to protect the men in coupling cars by keeping the end sills of the cars from coming in contact in case the draw-head or spring should break. This is the primary object. A secondary one is to protect the ends of cars from injury.

If it should be said that more lives have been lost and limbs broken, twice over, by dead-blocks than there would have been had these attachments never been used, such a statement might not be deemed very much out of the way. If there were no dead-blocks, the swell of the draw-head would, in the event of a broken spring, prevent its being pushed beneath the car; and unless the cars were coming together so rapidly as to deter any one from going between them, the ordinary draw-heads would keep the end timbers far enough apart—say ten or twelve inches—to protect a person of ordinary size from injury.

The writer was connected with a road some year since which used double dead-blocks on its freight cars, but none on the cabooses. If the draw-heads had been taken off two of these cabooses and the two cars pushed together, there would have been no space left between them. Some twenty of these cabooses were kept on a side track, and it sometimes happened that trainmen in their hurry to get home would give their caboose such a jerk as to break a draw-head or spring. On several occasions the brakemen in getting out their cabooses which stood at the inner end of the track, coupled two of them together and both draw-head springs were broken, but in no instance was any one injured. Once or twice when the engineer was irritable and the contact violent, the draw-heads were forced in so far that the brakeman was in some peril. At

the same time it was a thing of almost daily occurrence for men to be caught between the dead-blocks of the freight cars. The blocks on these cars were placed so far apart that the men had either to stoop and do the coupling underneath or stand between the blocks, the distance being too great to reach over them. The greater number of accidents, it is true, occurred to new and inexperienced hands who got caught while standing upright and trying to reach over. The blocks would have been less dangerous had they been placed nearer together. They were of wood 7 inches square and faced with iron an eighth of an inch thick. The blow was received on the end of the grain, which split and made them short-lived. Cast-iron blocks were afterwards substituted but without any change in position, and although these would in time crack and chip off, they lasted longer than the wooden ones.

With these facts in view, it seems to me that dead-blocks might be dispensed with entirely, and that by casting a flange or ring on the neck of the draw-head and designing the end of the draft timbers for the reception of a similar flange or ring which might also be sustained by the end sill and take the place of the draw-bar loop or carry-iron, it would be possible to make the draw-heads themselves serve as dead-blocks. It may be said that if the draw-heads are made of cast-iron they will break; but as the double dead-blocks are now very generally made of that material, which is better than wood, the objection has apparently little force. At best, it is simply a matter of putting cast iron enough into the draw-heads to increase their strength to any desired limit. Or, why could not two pieces of timber be used, one on each side of the draw timbers, with their inner ends abutting against the body bolster, and their outer ends located a few inches *below* the draw-head and connected by a cast iron cap, serve as good a purpose as the dead-block on the end sills? It is true that the interchanging of cars would defeat this arrangement unless all of them had similar attachments. But assuming that dead-blocks are indispensable for safety, it may be said that many cars are now running with no dead-blocks at all, a fact which, as far as it goes, disposes of this objection. Placing the blocks below the draw-bar would at once deprive them of their destructive character, while their solidity would in no degree be impaired, as the point of abutment on the bolster of the two timbers referred to could be connected with the end sill by an iron rod, and thus throw the shock of collision on the end sill as now.

It is claimed that the single buffer-block above the draw-bar is safer for the men in coupling, which is undoubtedly true if the double blocks are so far apart as to occupy a position which the brakeman's arm or body naturally assumes in coupling; but if these double blocks are placed so their distance from out to out is the same as the length of the single block, say 28 inches, then the open space between them makes them much preferable to the single block. There is on the various roads such a diversity in the position and style of these blocks that the frequency of accidents is not surprising. Some of the double blocks are so far apart that the single blocks pass between them, and in case the draw-heads break or are pulled out, the distance between the end sills is reduced to six or seven inches or the thickness of the blocks. A brakeman, of course, would not be likely to go between cars if he saw that a draw-head was gone, but all practical railroad men know that when coupling is done at night or in a hurry, the absence of a draw-head is not likely to be noticed until the victim is in a position to be caught and crushed. The action of the Car-Builders' Association in regard to the position and dimensions of these blocks is very good, and would do much to diminish the number of accidents if the roads would give heed to what has been recommended.

S. F.

The Use of the Westinghouse Automatic Brake.

The following circular has been issued by the Westinghouse Air Brake Co. in relation to the use of the automatic brake:

In consequence of an accident, which was partly due to the improper application of the brakes from the interior of the car, we sent a circular on March 6, 1882, to all of the railways using the automatic brake, asking for replies to the following questions in regard to the use of the conductor's valve:

"First. How many times has the use of the conductor's valve been the means of averting disaster?

"Second. Do you find that it is frequently used by unauthorized persons?

"Third. What is your opinion as to whether or not this valve should be continued in use on the cars?"

We have received many answers to the questions, and these answers are very conflicting; but numerous instances are given wherein the presence of the conductor's valve has probably averted serious accident. No cases are given where accidents have been caused by the improper use of the conductor's valve, though it seems that the valve is frequently operated by unauthorized persons.

The majority of those replying were in favor of continuing the valve in use, while others were decidedly of the opinion that it ought not to be used.

Many of those in favor of its use were of the opinion that the valve ought to be so arranged in each car that it cannot be operated by passengers without the knowledge of everybody in the car, and it was frequently suggested that the conductor's valve, usually put in the water-closet, should be boxed, so that it cannot be tampered with by people in the closet.

The agitation of this question has led some railways to introduce a change, which, we think, can well be followed by all railway companies. The conductor's valve is located and arranged so that it can be operated only from the inside of the car, by pulling the cord attached to the handle of the valve, and the escape pipe from the valve is made to enter the car. By this arrangement the pulling of the cord and the opening of the valve instantly applies the brakes, and the passengers are made aware of the use of the apparatus by the escape of the compressed air.

During the 10 years in which the automatic brake has been in use, but one case has come to our knowledge in which an accident occurred to a train stopped by the improper use of the conductor's valve, and even in this instance it had been admitted that the neglect of trainmen to observe ordinary precaution for protecting a standing train was the sole cause.

We think it will be generally conceded that but a very small percentage of the unexpected stoppages of trains is due to the improper application of the brakes, and that the rules governing employés are sufficient to protect any train that is unexpectedly brought to a stand.

Although the improper use of the conductor's valve has only indirectly been the cause of one accident to our knowledge, yet accidents, due to the neglect of the trainmen in not observing the rules that are especially designed for such cases, have resulted from the stoppage of trains at unexpected points, by the bursting of hose.

We earnestly call the attention of railway officials to the importance of drilling trainmen, so that in the event of the sudden stoppage of the train, resulting from a burst hose, or the conductor's valve being operated, they may immediately release the brakes, and proceed to a safe place for repairing the damages, rather than to undertake such repairs out on the line without protecting the rear of the train.

We should suggest an order to be issued to all trainmen, worded somewhat as follows, and that the men should be occasionally drilled in order to see that they quite understand their duties in this respect:

TO ALL TRAINMEN:

All trainmen are directed to make themselves familiar with the method of releasing the automatic brake, by opening the cocks under the vehicles, to avoid unnecessary delay from the unexpected stoppage of the train by the bursting of a hose or pipe. It is important that the following rules should be observed:

The *engineer* should immediately, on feeling the brakes applied, turn the handle of the engineer's brake valve so as to maintain the pressure in the main reservoir, which is all-important. He should observe his gauge, and if he sees that all of the air has escaped, he will know that a pipe has burst or that the conductor's valve has been opened and held open. If the pressure is only reduced sufficiently to apply the brakes, and the reduction then ceases, he will know that the conductor's valve has been opened long enough to cause the stoppage of the train and has then been closed. In this case he can easily release the brakes in the usual way, upon receiving the proper signal from the conductor.

The engineer should warn the trainmen, when the brakes have been applied in such a manner that they can not be released from the engine, by giving a succession of short double whistles (or any other signal to be agreed upon).

The *rear brakeman* must, upon the stoppage of a train, immediately proceed back the proper distance to protect the rear of the train, *without attempting to release any brakes.*

The *conductor* shall proceed to the rear of the train to see that the rear brakeman has protected the train, and shall release as many brakes, beginning at the rear, as he can.

The *fireman* shall release as many as he can, beginning at the tender.

The *middle brakeman* will begin about one-third of the distance from the engine, and release the brakes toward the rear, until he meets the conductor.

As soon as the brakes are released the train should proceed, depending upon the hand brakes, until a station is reached, where the damages can be ascertained and repaired without danger to the train.

All of the brakes on a long train can be released in about one minute, if each of the employés attends to the duties designated above.

TRAIN SIGNALING APPARATUS.

Among the replies received to our circular, there were several suggesting that the conductor's valve should be retained in use, provided some means could be offered for releasing all the brakes from the engine independently of the brake pipe.

We have perfected an apparatus of this kind, to be used in connection with our train-signaling apparatus.

This signaling apparatus requires an extra line of pipe, in which a pressure of about 15 lbs. per square inch is maintained.

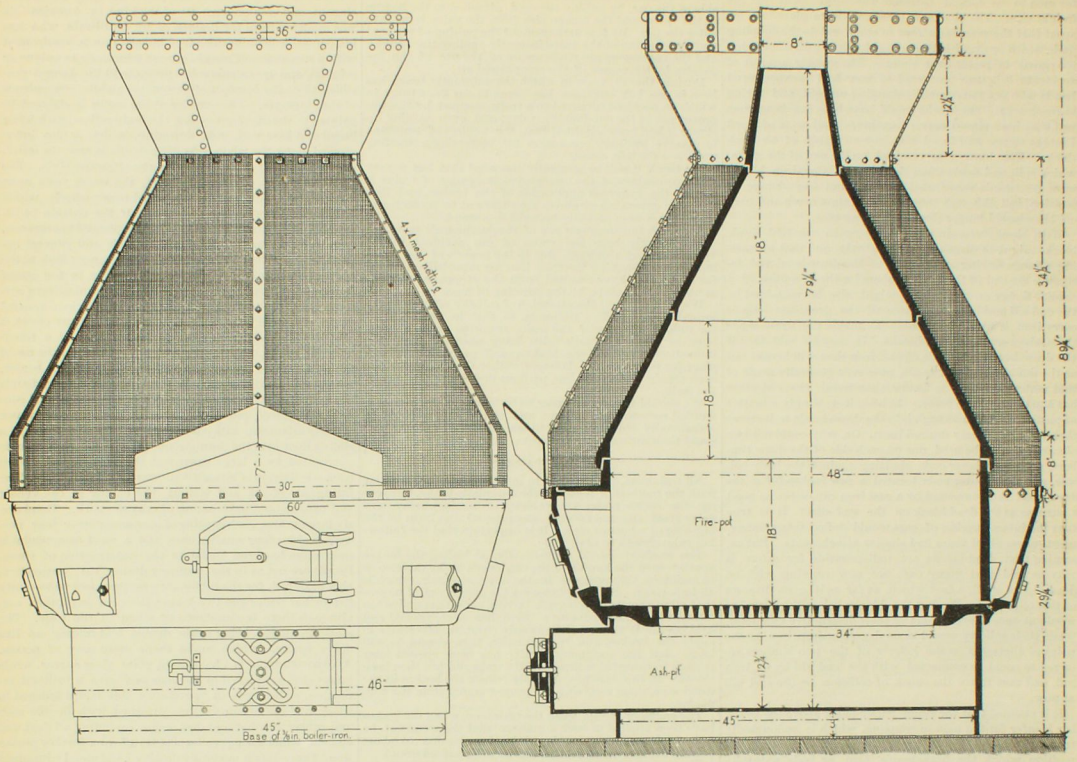
The apparatus for releasing the brakes is a small valve, having one end connected to the signaling pipe and the opposite end connected to the brake cylinder. So long as the ordinary pressure of about 15 lbs. is maintained, there is no connection from the brake cylinder to the atmosphere. In order to release the brakes it is only necessary to increase the pressure in the train signaling pipe to 35 or 40 lbs., when these special valves are opened, allowing the air to escape from each brake cylinder. The total cost of the train signaling apparatus with these special release valves will be $25 per car, or $5 more than the train signaling alone.

We may say that the train signaling apparatus has been adopted by the Pennsylvania Railroad, and is being applied to all its equipment.

Car-Building in Canada—A Superb Dining Car.

A new dining car has just been completed at the shops of the Great Western Division of the Grand Trunk Railway, at London, Ont. It is named "Windsor," and is now running in the fast trains between Detroit and Chatham. The car was modeled from designs by Mr. J. D. McIlwain, the Superintendent of the shops. Two parlor cars have also been turned out recently from the same shops, with mahogany finish and very superior workmanship throughout. The "Windsor" is described as follows in the London *Free Press*:

"Mr. J. D. McIlwain, the efficient Superintendent of the shops, has just achieved his greatest triumph in the completion of the dining car "Windsor," which can be pronounced as being, without exception, the most handsome, elegant, and commodious car of the kind in America. It was modeled from the designs of Mr. McIllwain, who has introduced a genuine novelty—indeed, one is confronted with a succession of novel features which are as unique as original, and are calculated to promote to the largest possible extent the comfort of passengers and the convenience of the employés. The exterior of the coach is elaborately painted in the standard colors, the body yellow, dark letter board and base with gold flowering, which is also interspersed along the whole side. The design is new, the lettering brilliant and of a novel and more attractive style. The platform can be effectually closed, the coach rests upon six-wheeled trucks having steel-tired paper wheels, which will render the running smoother. If the outside be attractive, the interior presents a really splendid appearance, both in regard to the furniture, utensils and general appointments. Entering the lobby the passenger finds at the right a sideboard for glassware, with racks in the center for wine. There is an ice-box above communicating a current of cold air to the bottom compartment, where mineral water, etc., will be stored. A commodious fruit closet is also provided, adjoining a box for broken ice, and a receptacle for empty bottles, over which is a closet for the use of the men. Upon the opposite side stands the Searle heater, which will distribute warmth throughout the car by double rows of pipes running along each side. A wash-stand conveniently placed and furnished with hot and cold water attracts attention, with closet above. Passing through a sliding door into the dining-room proper the passenger is confronted by a large mirror at the opposite end, giving back a reflection of himself with startling distinctness. The fittings are of oak and walnut, the ceiling in oak veneer and ornamented in imitation of crayon work. There are six large tables, each capable of accommodating four persons, besides four smaller ones, and a most commendable innovation has been make in the construction of these. People are not as in the ordinary dining car, uncomfortably cramped, for the tables are over three feet wide—fully five inches wider and two longer than on any other car, although there is abundance of room in the aisle. The seats are unique, being made double and folding up like opera chairs, which make them more easy af access. Above each table is a handsome plate glass mirror, while larger ones are placed at the ends and give a brilliant reflection. The car is lit by ten deck side lamps finished in silver, and the windows are furnished with double sash and rubber weather and dust strips, excluding all dust and cinders, while spring roller shades afford a further protection. The ceiling is tastefully designed, and metal trimmings are all silver mounted, and above each table is a handsome painting of fruit, fish or game. The seat ends are different from any thing now in use, and one very noticeable feature is the absence of all drapery, which too often becomes a receptacle for dirt and filth. Every thing is made as attractive as possible, but it has also been made substantial, and can be cleaned at any time with ease. Passing on, the passenger reaches a sideboard having a plate glass mirror and fitted up with every convenience. To the right and left are lockers and closets for china and glass. To the left is a commodious pantry filled with every requisite, hot and cold water pipes, etc, and a sliding door opens into the kitchen through which the dishes will be passed. At the right of the sideboards is a passage-way leading to the opposite end of the coach, and in its construction a great objection met with in ordinary cars of the kind is overcome, the side being closed up, so that people passing through will not see into the pantry or kitchen or inhale any odors from the viands. The passage is two feet wider than ordinary, and a door four feet in height leads into the kitchen. This is about as near perfection as it is possible to attain within such compass, and is provided with every conceivable appliance to facilitate the preparation of the esculent viands that are to be served. It is fitted up with one of Wilkes' Chicago ranges, built especially for this car. Adjoining it is a steam carving table operated separately from the range, which also furnishes heat for the tea and coffee. Throughout are racks for dishes, utensils, etc. Upon the left is a sink furnished with hot and cold water from the heating boiler on the range, adjoining which are refrigerators for milk and fish, and a meat table, with cupboards and lockers underneath, also a repository for fuel. In rear of the door stands a chest of drawers, and a refrigerator for meats, with a large ice-box above supplied from the outside, and capable of holding 1,000 pounds of ice. This refrigerator is lined with galvanized iron, and fitted with movable iron shelves. The interior of the kitchen is finished in oak, and the windows are arranged so that the colored brethren will not have their heads pushed out at stations as much as formerly, the lower sash being made stationary. In the roof are placed three automatic ventilators, which, with the deck ventilators, give good ventilation. In the floor is a trap for carrying away the garbage, avoiding the necessity of accumulating filth. The floor throughout is laid in ash and oiled, with a center strip of Brussels carpet along the aisles of dining-room, while the lobby and pantry floor are covered with inlaid rubber matting. In fact the car, from end to end, both interior and exterior, is a marvel of artistic beauty and convenience, superb in its appointments and the most commodious of the kind now running."



SAND-DRYING STOVE—WABASH, ST. LOUIS & PACIFIC RAILWAY.

The engravings represent an outside view and section of a Sand-Drying Stove, designed by Mr. Jacob Johann, the General Master Mechanic of the Wabash, St. Louis & Pacific Railway. Its construction and dimensions will be readily understood from the cuts. It is simply a cone-shaped stove with a jacket of wire netting, between which and the stove the sand is placed for drying by being shoveled from the car into the hood at the top. The delivery of the sand, as it becomes dry, is automatic, the angle of the side of the stove being sharper than the angle of rest of sand as it becomes dry enough to run freely, it passes through the netting as fast as it dries and falls to the floor, from which it is shoveled into bins. This automatic feature is a very important one and greatly adds to the capacity of the stove, which will dry out a car load of wet sand and deliver it dry on the floor in fifteen hours.

It will be observed that the stove is put together in sections, so that portions of it may be taken out and renewed when necessary, and that the fire door is large enough to take in good sized pieces of wood or refuse material that may be used for fuel. The door is covered by an angle-piece of cast iron to shed the falling sand and keep it clear of the door space. The drying of sand on thin belts in an inclined position so as to be self-delivering, is without doubt the correct method, and if steam is preferred as the drying agent, the stove could be easily replaced by a sheet-iron body with steam pipe fitted on the inside.

We are authorized to say that this stove is not patented, and is therefore free to be used by whoever cares to avail themselves of its cheapness and effectiveness.

THE new shops of the Canadian Pacific Railway at Hochelaga, Can., are thus described by the Montreal *Star:* The machinery is in every way superior, and on the ground floor includes an axle and wheel quartering machine which has been put in position and is the only one in the country; also a horizontal borer for turning engine driving wheels. They have work progressing in the department for fifteen engines, which will be pushed forward immediately. It is the intention to complete five or six engines monthly, which will equal anything at present undertaken by any one establishment on the continent. In this building is a traveling crane, which supplies all the work to the several machines, also two powerful traversing cranes capable of lifting 25 tons each. At the end of the building is the riveting tower with a hydraulic riveter of 35 tons. The round-house is 180 feet long and 90 feet wide with a turn-table of 50 feet. In this building is the bolt plant with a capacity of turning out about 5,000 bolts per day. Blacksmith shop 204 feet long and 65 feet wide, supplied with 21 furnaces and one 3,000-pound Davy steam hammer, besides four smaller ones of the same make. The passenger car shops are 172 feet long and 85 feet wide, and are supplied with the latest machinery of every kind. There are now in the course of construction six baggage cars. Attached to this building are the car machine shop, 99 feet long and 85 feet wide, two stories high, coppersmith and tinsmith shop, 47 feet long and 40 feet wide. The car paint shop is a handsome building 131 feet long and 128 feet wide. Several cars are being painted and repaired in this department. Connected with this is the upholstery department. Between the paint shop and car shop is the traverse for shifting cars from one building to the other. The boiler house is 40 feet by 55 feet. It contains two extra large boilers made in Sheffield by Hawksley, Wad & Co., and another is shortly to be placed in position. The engine room is 42 by 25 feet. The engine is Canadian manufacture of 200 horse-power. The offices and store-rooms are very nicely fitted up in a building 30 by 45 feet and two stories. It contains also the drawing-room with a staff of six, under Mr. Atkinson, late of the Grand Trunk Railway. Work has been steadily increasing for some time, and to-day the works employ 380 men.

THE successful use by English troops, during the Egyptian war, of some hastily armed railway trucks, drawn by an iron-clad engine, has induced the Spanish government to order the immediate construction of a specially designed train, which, in time of war, will be available not only as a means of rapid transport for men engaged in the cutting and repairing of railway lines, but also a depot for engineering stores, and as a movable fortress. The train will consist of 26 trucks, upon which will be placed bullet-proof carpenters' shops and forges, magazines for food, implements, ammunition, and explosives, some iron boats and pontoons, a powerful crane, a complete electric lighting apparatus, a quantity of telegraph plant and several field guns. The trucks will be provided with high sides, which will be iron-clad and loop-hooled, and motive power will be supplied by two heavily-armored engines, one at each end of the train. This novel man-of-war will have a crew of 8 officers and 166 men, all of whom will in case of need eat and sleep on board, and arrangements will be made for the further accommodation, if necessary, of another hundred men.

Master Car Painters' Association

The fourteenth annual meeting of this Association was held in Baltimore, Md., Sept. 19. A number of papers were read upon subjects previously announced, of which we give place to the following:

BY F. S. BALL, FOREMAN CAR PAINTER, ALTOONA SHOPS OF PENNSYLVANIA R. R.

Subject.—Will the loss of the earnings of a passenger car while in shops for repainting be compensated for by the value of repairs done to it by the usual methods?

In answering this question, we propose to adopt the ingenious device of the Yankee who answers one question by asking several, nor do we propose to ask only, but we shall endeavor to answer the questions we propound.

First, then, does the withdrawal of a passenger car from the roads for repairs of any kind necessary for its preservation entail a loss of earnings to such road?

The passenger equipment is to a railroad what the machinery is to a mill or factory, a part of the earning power of the capital invested in it, and as the business of the mill or factory could not be carried on without machinery, neither can a railroad without cars in sufficient number to meet the exigencies of ordinary wear and tear in the conduct of its utmost traffic; consequently we meet the question propounded to us for solution with the declaration that when a car needs general repairs it is unfit for continued service and is therefore no longer a tenant of the road; hence we maintain that its withdrawal entails no loss; but, less our question fall through or lack in importance, we propose to examine the usual methods of repainting passenger cars with regard to durability and the time occupied in performing the work, and to suggest, if possible, the practicability of reducing the cost of the same to a much lower minimum than at present, without any appreciable loss to the car in general appearance or durability. In doing this it will be necessary to call your attention to statistics obtained for the most part from the experience of the Pennsylvania Railroad, and as valuable statistics can only be gained when a passenger car is kept in the best possible condition while being put to greatest use, we deem we have committed no offense in doing so.

Average life of a passenger car, sixteen years.	
Value of a passenger car when new	$5,100.00
Estimated value at sixteenth year	945.03
Estimated depreciation in value sixteenth year	4,154.96
Estimated annual depreciation in value	259.68
Yearly average cost of painting repairs	140.46
Yearly average cost of all other repairs	553.54
Total yearly repairs	700.00
Cost of painting repairs during life of car	2,343.47
Cost of all other repairs during life of car	8,856.64
Grand total of repairs	11,200.11

According to these figures you will note that the cost in market of a Pennsylvania Railroad passenger car would be about $5,100. Its life is estimated to be about 16 years, after which time it has but scrap value, which is about $945. From this it will be seen that notwithstanding its

annual repairs, the average cost of which amounts to about $700, it has undergone an annual depreciation of $259. Now if to this $259 be added the cost of annual repairs ($700) and the sum multiplied by 16, it will be seen that the wear and tear of the car during life has been $15,344. Now, as the painting on a passenger car is destroyed with its usefullness, you will observe that all the painting and varnishing it has received has been totally merged in its wear and tear; hence it becomes an interesting question, as well as a subject for investigation, as to how much the painting has contributed to the preservation of the car during these 16 years. Like printing, painting is an art preservative, and so far-reaching in its results, when intelligently applied, that it would be impossible to say to what extent it has been the means of preserving the car; or, if neglected, to what extent the neglect has damaged or hastened its decay. It is of course a matter of importance to all roads that work on their passenger cars should be done as speedily as possible. The average time expended in the painting of a passenger car by the system most in use, that is, lead and oil, is several weeks, which is probably the shortest time possible by this system. There are other systems lately perfected, by which it is claimed a car can be painted in one-half that time. Now, as continued competition is going on between the different roads, it is a requisite that the passenger equipment of each must be fully up to that of its competitors in every respect, else a loss of patronage would follow; therefore, some regard must be paid to the quality of the painting in reference to its general appearance. We do not think that a passenger car should receive the same degree of finish as a private carriage. It cannot be so well cared for, nor receive the same protection. Being unavoidably subjected to so much harder usage and greater exposure, it soon loses its beautiful gloss, however highly finished, and in a few days or weeks at most, the pelting sparks from the engine together with the flying dust and sand, will have abraded the carefully-finished surface and destroyed its beauty; and no amount of careful washing at stated periods by skilled labor with soaps made according to a prescribed formula will restore its lost surface. Now, since this is the case, as every one acquainted with the painting of passenger cars will admit, and as at the convention of 1878 the question, "Is it any longer practical to surface in any manner for a railroad car?" was discussed, and, as we remember, the negative was conceded. We for our part, without questioning that decision, would advocate a happy medium between the two extremes for general practice. The prime cost of painting a passenger car outside is variously estimated at from $300 to $600. On the Pennsylvania Railroad it is $210.12, and if it is not properly protected will require repainting in two years, and in some climates perhaps in less time. Now, this, for 16 years, is of itself a considerable item which has to be added to the wear and tear, and is included in the statement before made.

To lessen this great item of expense, without risk of increase in the annual depreciation of the value of the car, and at the same time render the painting more durable and a greater protection to the wood, is the object we have in view.

The surfacing material employed in the painting of a car is composed of pigment and vehicle, and this, without contributing much to its durability, may be elaborately applied or cheaply executed. Now, as its chief value is in its elasticity and the general cohesion of its particles, it follows that, for durability, the cheaper method is the equal of the most elaborate, hence we would urge less labor in the preparation of the surface. This point gained, we would proceed to protect the surface thus obtained in the best possible manner. Our proposition, then, is that as long as the combined pigment and vehicle is intact the painting is preserved. But how shall we keep it so and maintain our first proposition to lessen the general wear and tear and the special cost of painting, thereby, perhaps, lengthening the life of the car? It is a conceded fact that without varnish the painting on the passenger car would be of little value; it is the bulwark that shields the pigment from the influences of sun and cloud; therefore, we say, keep well covered with the best and most durable varnish that can be obtained, and as the best varnish made will lose its elasticity and become porous in a short time when exposed to the weather, we think you will admit the absolute necessity of frequent revarnishing. Our country is so large and its climate so varied, no absolute rule as to its frequency could be adopted, but it is safe to say that in the Northern States this should be done at least once in twelve months, and in the Southern States twice. Now, as five or six days is all that is necessary for cleaning and varnishing a car, a railroad could much easier spare its cars, and more frequently for that length of time, than they could for repainting. Further, we claim that by frequent revarnishing it is no longer necessary to repaint every two years (unless by reason of other repairs, such as faulty construction or the use of unseasoned lumber or wreckage it is made necessary), once in three or four years being often enough, according to climate.

In treating this subject it may occur to you that we have barely touched upon some points that might have been pursued with profit, but we find the field so extensive that it is impossible to cover the ground without obtaining more statistics with a view to further investigation. We feel that we have sustained our position, that although no loss is sustained by the withdrawal of a car from service when unfit for service, yet the special cost of painting, and the time the car remains unfit for service, may both be greatly reduced.

BY D. D. ROBERTSON, MASTER CAR PAINTER OF THE MICHIGAN CENTRAL R. R.

Subject.—Can a passenger car be painted in less time than 30 days to insure durability? And, if so, by what method?

The subject you have assigned me is one quite characteristic of the present age, and in perfect harmony with the people among whom we live. Everything must be done in haste, and the motto of the present day is "Time is money." A few years ago the voyage across the Atlantic by sailing vessel occupied so many weeks, but is now successfully accomplished by steam in so many days. The tedious trip across the prairies by the steady plodding of a yoke of oxen at the rate of 20 miles a day is now superseded by the rushing train at twice that number of miles per hour, and what is true of travel is equally true of business. Look to the streets of our thronged cities: the constant stream of business men rushing to and fro as if their whole fortune depended upon their reaching a certain point in a given number of minutes. And have not the agricultural districts kept pace with the commercial world by the introduction of machinery? Farms of 300 acres can be more easily worked with fewer hands, and in much less time, than farms of 50 acres. While all this is true as to many branches of mechanical business, the same increased rapidity can not be applied to those bordering on the professions. Our association is composed of men whose work is as much professional as it is mechanical, and all the improvements which have been made in the past few years have been just so far as science and mechanism could help us in our material; but the labor part, partaking more of a professional character, can only be slightly, if at all, affected by the introduction of any thing to secure increased rapidity or durability. What we need more than any thing to improve our work is what a noted artist said to a connoisseur when he asked him what it was he put into his colors to give them such a bright and natural effect. He answered that he always mixed his paints with brains. I know of no system of painting superior to the lead foundation, flat material for coloring and good wearing body varnish for protecting. Other systems have been introduced that may be easier handled, cheaper and finished in shorter time. Some of the advantages claimed for them I even question, and I know that some new systems cost as much and more. If the labor is less the material is more costly, and I have yet failed to find any who have been trying new systems who affirm that any are superior to the old. Now my experience would not warrant me to guarantee a car painted by the old system within 30 days to be durable and give entire satisfaction. One of the things, and perhaps the prominent one, in favor of durability is allowing ample time between the coats, especially the foundation part of the work. Cars that are allowed sufficient time between the coats and also time when finished before being put into service, in my experience make by far the best record for durability. Take a car from the foundation which is to be finished without rough stuff, and at the least calculation it has to be gone over nine times—three times before coloring, three times coloring and three times varnishing—and the time consumed in the whole of the work will be something like the following:

Priming	1 day.
Should stand for	4 days.
1st coating	1 day.
Should stand for	4 days.
Puttying	1 day.
2d coating	1 day.
Should stand for	3 days.
Decorating	3 days.
1st coat varnish	1 day.
Should stand for	2 days.
2d coat varnish	1 day.
Should stand for	3 days.
3d coat varnish	1 day.
Stand before going into service	4 days.
Total	30 days.

This is not allowing any time for filling up hard-wood corner-posts or rails, and barely allowing time between the coats to secure durability. Those who have adopted the repeating process will reduce these figures, but after a fair trial with different varnishes, of that process, I have for the present laid it aside as impracticable. The cars looked remarkably well when finished, and for some time after running kept up a good appearance, but they did not by any means make as good a final record as the old system. A large majority of the car shops have not the facilities to do the work even as rapidly as that now given, the regular run of work preventing them giving employment constantly to a sufficient number of men in each department to carry a single car through in that time. Larger railroad and contract shops might be able to do so, but as a general thing it cannot be done by the old system in less time to secure durability, and I know of no new system that would. Of course it is understood that the foregoing remarks have reference to a first-class car having the usual amount of decoration.

High Speeds on Railways.

While there can be no doubt that as regards cheapness and rapidity of construction, general excellence of bridges, locomotives and cars, the railways of this country are ahead of the rest of the world, the signaling arrangements here, with few exceptions, are rudimentary and inefficient and render fast traveling a matter of considerable difficulty, if not danger. It is impossible to run a really fast express train if the signals are ambiguous, and if every level crossing is made a compulsory stopping-place. The saving in time by fast trains can only be fully felt in a great country, where very long journeys are not only possible, but are frequently undertaken; but hitherto this fact has been little appreciated, and people have been content to travel at a slow speed and put up with frequent stoppages because the railways were new, the rails roughly laid, and many bridges unsafe at a high speed. But of late years these conditions have been materially changed. The wide-spread use of steel rails, the greater care bestowed on the road-bed, and the introduction of iron bridges of first-class workmanship, have rendered high speed perfectly safe and easy on most parts of good roads in the Eastern and Middle States; but it is rendered unsafe where switches are so arranged that they may be left open to an approaching train without any signal warning the engineer, or the signals are so formed that the difference o the eye between a clear or all-right signal and a danger or stop signal is slight in snowy weather, or under certain atmospheric conditions which render the difference between colors imperceptible, though a difference in form may be perceived.

The real gain of time to a business man obtained by a difference of a few miles an hour in the speed of a long-journey train, is best illustrated by an actual case. A man in New York wishes to do a day's work in Chicago. He takes one of the fastest and best appointed trains he can find—the Chicago limited. It leaves New York at 9 A. M., and lands him at Chicago at 11 the next morning, having accomplished 911 miles in 26 hours 55 minutes, allowing for the difference in time between the two cities. This makes an average speed of 33.8 miles per hour, including all stoppages. But assume, what is surely not extravagant, that as high a speed can be attained on the Pennsylvania or any other first-class American road as on an English main line, and what shape does the problem assume? On one English road, the Great Northern, the distance between Leeds and London (186¼ miles) is done in 3 hours 45 minutes, including five stoppages; on another, the Great Western, the 129¼ miles between Birmingham and London is run in 2 hours 45 minutes, including two stoppages; and as neither of these routes is particularly level or straight, and both pass through numerous junctions with a perfect maze of switches and frogs, they give a fair idea of what is possible in speed on the railroads of this country. These figures give, respectively, speeds of 49.8 and 47.2 miles per hour. Taking as a fair average 48 miles an hour, including stoppages, the journey from New York to Chicago should be done in 18 hours 59 minutes, or, say 19 hours—a saving of 7 hours 55 minutes on the present time; so that, if the train were arranged to leave at 55 minutes past 4 in the afternoon instead of 9 o'clock in the forenoon, the whole of this time would be saved in the busy part of the day; effectually adding a day to our imaginary traveler's business and dollar-making life.

It may be thought that such a deduction is unfair, as the English style of car is so much lighter than the American; but, as a matter of fact, the average English express train is considerably heavier than the Chicago limited, and conveys about three times the number of passengers; and, as trucks and oil-lubricated axle-boxes are not yet universal there, the tractive resistance per ton is probably higher. It certainly, therefore, seems not only possible, but feasible, to attain these high speeds in this country, where, owing to the long distances to be traveled, they are more valuable than in England; and the great step toward attaining that end is the adoption of proper and efficient signaling arrangements. All the other steps are achieved; the American passenger locomotive of the present day is perfectly competent to drag a heavy train at a speed of over 60 miles an hour; the cars, as now constructed, can travel safely and smoothly at that speed; and the steel rail, the well-ballasted tie and perfect workmanship of the modern iron bridge can well support the thundering concussion of an express train at full speed. But this speed can only be maintained for a few miles at a time, if the engineer who guides this train be doubtful whether the dimly-seen signals imply safety or danger, or if the laws of the State bring him to a full stand where his road is crossed by a small corporation with a high-sounding title, which owns one locomotive with a split tube sheet and two cars down a ditch.

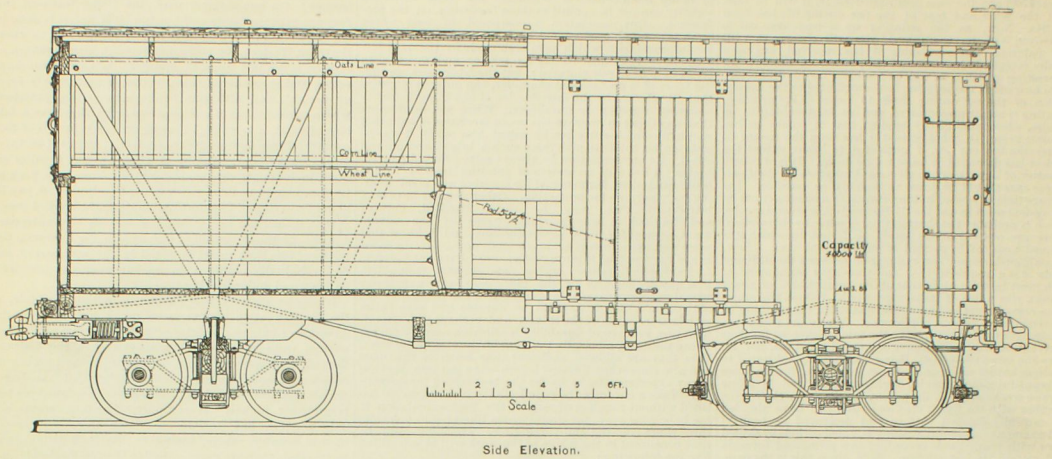
To run a fast train, a clear, uninterrupted road is absolutely necessary; and the reason is not far to seek. To move a body from a state of rest to a velocity of 60 miles per hour, or 88 feet per second, an amount of work must be performed equivalent to lifting that body 121 feet. Now, it is apparent to the simplest capacity that it requires a pretty powerful engine to overcome the resistance of a train running at 60 miles per hour without every few miles putting on brakes to destroy this velocity, and then to lift it 121 feet again to attain speed; the resistance of the air, and the friction of bearings on journals and of flanges against rails going on all the time. As a matter of fact, showing what severe work this is on an engine, the Zulu express on the Great Western Railway of England, which is the fastest train in the world, has been repeatedly carefully timed; and it is found, that, though running over an almost absolutely level and straight road, it takes a distance of 26 to 28 miles to attain its full speed, about 58½ miles an hour.—*Science.*

THE Cincinnati, New Orleans & Texas Pacific road has received some of the first of the twenty new consolidation, mogul and 8-wheel engines that are being built for the company at the Baldwin Locomotive Works. The Chattanooga shops have just turned out a 6-wheel connected pony engine, and are engaged on another; they are also turning out eight fruit cars a week. The ventilation of these cars is so perfect that fruit is carried in them from New Orleans to New York without deterioration. They can also be used for cotton and grain. They were designed by Mr. Jas. Meehan, the General Master Mechanic of the road.

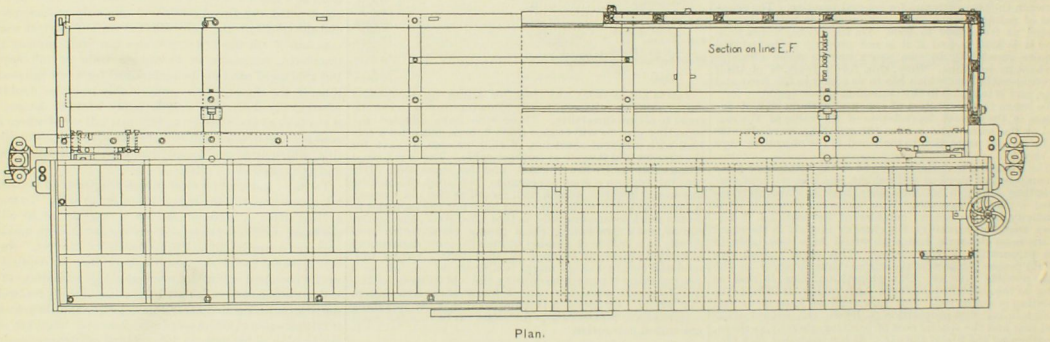
AT the shops of the Nashville, Chattanooga & St. Louis road, at Nashville, Tenn., three engines are being rebuilt. Mr. James Cullen, the Master Mechanic, has been using the frames, guides and links of some old 16-inch engines, and with an expenditure of $5,000 apiece, has rebuilt them into 17-inch cylinder ones. In the car department three passenger coaches are undergoing repairs. One car, built by Mr. J. Sawyer, the General Foreman, thirteen years ago, is 54 feet in length and without truss-rods. The original camber of the sills is still maintained. The means used to keep the car from sagging is an A or diagonal brace framed into the studding and window posts, a method that is in general use. From the appearance of this car it must be admitted that the necessity of truss rods is not very apparent. Mr. Sawyer advocates 4 × 8 journals for all cars, and thinks the M. C. B. standard is too small, for the reason that the latter frequently heat, but not the former. New shops are talked of in place of the present ones, which are inconvenient in many respects, although with their nine lathes, three planers, two shapers and two drill presses, 87 engines are kept in first-class condition.

STANDARD BOX CAR—CHICAGO, BURLINGTON & QUINCY RAILROAD.

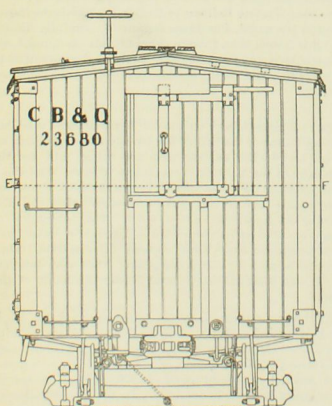
(Capacity 40,000 Pounds.)



Side Elevation.



Plan.



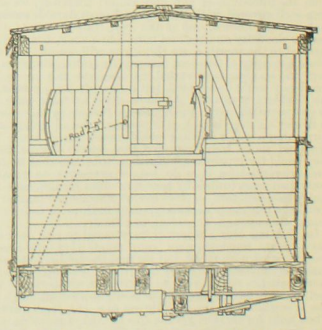
End Elevation.

GENERAL DIMENSIONS.

Length over sills	28	ft. 0	in.
Width over sills	8	" 9	"
Bottom of sill to top of plate	7	" 10	"
Top of sill to bottom of plate	6	" 7	"
Length inside in the clear	27	" 5½	"
Width inside in the clear	8	" 2½	"
Side door opening	5	" 0	"
Center of bolster to out of end sills	4	" 7¾	"
Wheel base of truck	4	" 6	"
Center of draw-bar above rail	2	" 9	"

TIMBER (FINISHED SIZES).

Pieces.						
256 double board roof, clear white pine	⅞	× 5½	in. ×	4 ft.	8	in.
170 outside sheathing, clear white pine	¾	× 5¼	" ×	8 "	0	"
40 Inside linings, com. Nor. pine	⅞	× 5¼	" ×	14 "	0	"
46 Flooring, com. Nor. pine	1⅝	× 7⅝	" ×	9 "	0	"
1 Door drips, " " "	1¾	× 7½	" ×	16 "	0	"
2 Side sills, " " "	5	× 9	" ×	27 "	6	"
4 Stringers; " " "	5	× 9	" ×	27 "	6	"
2 Side plates, " " "	3	× 6	" ×	28 "	0	"
1 Ridge pole, " " "	2¼	× 3½	" ×	28 "	0	"
4 Purlins, " " "	1¾	× 2⅝	" ×	28 "	0	"
2 Side fascia, " " "	1¾	× 3¾	" ×	28 "	0	"
2 End fascia, " " "	1¾	× 3¾	" ×	9 "	9	"
1 Center running board, com. Nor. pine	2	× 6	" ×	16 "	0	"
1 Center running board, com. Nor. pine	2	× 6	" ×	14 "	0	"
2 Side running boards, com. wh. pine	1	× 6	" ×	14 "	0	"
2 Side running boards, com. wh. pine	1	× 6	" ×	16 "	0	"
10 Side grain doors, com. wh. pine	⅞	× 5¼	" ×	12 "	0	"
4 Side grain doors, com. wh. pine	⅞	× 10	" ×	3 "	1	"
2 Side grain doors, com. wh. pine	⅞	× 5	" ×	3 "	0	"
4 Side grain doors, com. wh. pine	⅞	× 5	" ×	3 "	3	"
10 End grain doors, com. wh. pine	¾	× 5¼	" ×	2 "	7	"
12 End grain doors, com. wh. pine	¾	× 5¼	" ×	2 "	1	"
4 Bottom inside lining, com. pine	¾	× 2	" ×	14 "	0	"
2 Furring side grain doors, com. pine	2	× 4	" ×	4 "	0	"
2 Between end roofing, com. pine	1	× 1¾	" ×	14 "	0	"
1 Brake stay blocks, com. pine	1¾	× 5	" ×	3 "	0	"



Section on Line C D.

Section on Line A C.

4 Bottom and top grain doors, ash	⅞	× 5½	in. ×	6 ft.	0	in.
2 Brake beams, elm	4	× 6	" ×	5 "	9	"
2 End sills, wh. oak	4¾	× 9	" ×	8 "	9	"
2 End plates, " "	2¾	× 13	" ×	8 "	9	"
2 Cross ties, " "	4	× 8	" ×	8 "	9	"
10 Carlines " "	1¾	× 9	" ×	8 "	9	"
4 Draw timbers " "	4¼	× 7½	" ×	8 "	0	"
4 Side door posts " "	3½	× 4¼	" ×	8 "	0	"
4 End " " "	3½	× 4¼	" ×	8 "	0	"
4 Corner posts " "	3¾	× 4½	" ×	6 "	10¼	"
8 Body " "	2¾	× 3¾	" ×	6 "	10¼	"
12 Side body braces " "	2¼	× 3¾	" ×	7 "	9	"
4 End " " "	2¼	× 3¾	" ×	7 "	3	"
2 Buffer blocks " "	6	× 7¼	" ×	2 "	0	"
2 Short stringers " "	2	× 8	×	6 "	9	"
2 Brake blocks " "	4¾	× 9	×	2	1¾	"

2 End grain door b'lks	"	....	1¾	×	2	"	×	3	"	5	"
4 Side girths	"	"	....	2¼	×	3⅝	"	×	12	"	0	"
4 End	"	"	"	....	2¼	×	3⅝	"	×	3	"	1	"
2 End door	"	"	"	....	4¼	×	4¼	"	×	2	"	2	"
2 Ladder posts	"	"	....	1¾	×	2½	"	×	6	"	10½	"
14 Roof saddles	"	"	....	2	×	2	"	×	2	"	0	"
2 Side closed door stops	"	....	2¼	×	3	"	×	8	"	0	"
2 End	"	"	"	"	....	1	×	1½	"	×	3	"	9	"
8 Furring end posts	"	"	....	1	×	2½	"	×	4	"	0	"
4 Side door stiles, oak or ash	..	1¾	×	4¼	"	×	6	"	3	"
4 "	"	rails	"	"	....	1¾	×	7	"	×	4	"	9	"
4 "	"	"	"	"	"	....	1	×	5	"	×	4	"	9	"
4 End door stiles	"	"	....	1½	×	4	"	×	3	"	3	"
4 "	"	rails	"	"	....	1½	×	4	"	×	2	"	0	"
2 "	"	"	"	"	....	1	×	4	"	×	2	"	0	"
2 "	"	blocks, wh. oak	..	2½	×	3½	"	×	1	"	3	"
2 End door drip blocks, com. Nor. pine	.....	1¾	×	3½	"	×	2	"	6	"

TRUCK TIMBERS (FINISHED SIZES).

Swing beam, white oak	.....	9	×9 in.	× 5 ft. 7 in.
Spring plank,	"	"	.....	2½	×9	"	× 5	"	3	"
Dust guards, basswood	.....	½	×6	"	× 9	"	0	"

BOLTS AND RODS.

		Diameter.		Length.	
Draw-bars	2 bolts	1	in.	1	ft. 1 in
"	2 "	1	"	10	"
Follower guides	8 "	⅞	"	9	"
Dead woods	4 "	⅞	"	1	" 3½ "
Side grain doors	2 "	⅞	"	6½	"
Draw timbers	20 "	¾	"	1	" 5½ "
Draw bar stops	8 "	¾	"	6	"
" " "	16 "	¾	"	6¼	"
Dead woods	4 "	¾	"	1	" 3 "
Side sills and body bolsters	8 "	¾	"	1	" 0 "
Stringers	4 "	¾	"	11¼	"
Columns to body bolsters	4 "	¾	"	8½	"
Brake blocks	2 rods	¾	"	2	" 10 "
Center of truss-rods	2 bolts	¾	"	3	"
Dead wood to end sill	4 joint bolts	¾	"	1	" 9 "
Side and end sills	4 "	¾	"	1	" 1 "
Side and end plates	4 "	⅝	"	9	"
Cross ties	8 bolts	⅝	"	1	" 5 "
" "	4 "	⅝	"	1	" 2 "
Brake shaft step	1 "	⅝	"	7½	"
Brake shoes	4 "	⅝	"	6	"
" "	4 "	⅝	"	6¼	"
Brake pawl	1 "	⅝	"	3	"
Brake levers	2 "	⅝	"	3	"
Post rods	12 rods	⅝	"	8	"
Post rods through bolster	4 "	⅝	"	8	" 1½ "
" " through end plates	4 "	⅝	"	8	" 5 "
End cross rods	2 "	⅝	"	9	" 1 "
Side tie rods	4 "	⅝	"	5	" 0 "
Joint bolts, side doors	8 bolts	⅝	"	9	"
End door posts	4 "	⅝	"	6¼	"
Floor stringers	4 "	⅝	"	1	" 3 "
Bottom corner plates	16 "	⅝	"	6¼	"
Top corner plates	8 "	⅝	"	4½	"
Top end of door stops	2 "	⅝	"	6¼	"
Bottom end of door stops	2 "	⅝	"	8¼	"
" side door slides	14 "	⅝	"	7¾	"
Top " " "	14 c. sunk	⅝	"	6	"
Top end door slides	6 "	⅝	"	5¾	"
Joint bolts and doors	8 "	⅝	"	7	"
Side door rods	4 rods	⅝	"	5	" 4½ "

Wheels to weigh 555 pounds and to be guaranteed for four years, or 50,000 miles service ; to be pressed on axles at not less than 50,000 nor more than 60,000 pounds pressure at final stroke of press. Journal bearings to weigh 10 pounds each, and to be made of copper 16½ parts, tin 2½ parts, and zinc 1 part, and to be lined with lead (Hopkins' patent). Wheels, axles and journal bearings to be marked with year and month they are put in service. Body of car to have two coats of Parker's Cement or Prince's Mineral in oil, and iron work one coat of lampblack in oil. Trucks to have one coat of mineral in oil all over inside, and one coat of lampblack in oil on outside. Roof to have one heavy coat of Parker's cement or Prince's mineral in oil between the courses, and two heavy coats of same on top. Last coat to be sanded.

New Railway Bridge over Niagara River.

The Chicago *Journal of Commerce* says that the new bridge for the Michigan Central Railroad over Niagara River will be completed by Dec. 1. The structure will embody a new principle, upon which two similar bridges are now being constructed, one the new Tay bridge over the Firth of Forth, Scotland, and the second for the Canadian Pacific Railway over the Fraser River, British Columbia. Bridges built after the new design are known as cantilever bridges. Each end is made up of a section extending from the shore nearly half way over the chasm. Each section is supported about its center by a strong tower. The outer arm having no support, and being subject, like the other, to the weight of trains, a counter-advantage is given by the shore arm being anchored or weighted. The towers on either side will rise from the water's edge. Between them will be a clear span of 500 feet over the river, the longest double-track truss span in the world. The shore arm of each cantilever having been built and anchored, the other arm will be constructed in sections of 25 feet, the whole being made self-sustaining as each section is added. The ends of the cantilevers will reach only 375 feet beyond the towers, leaving a gap of 125 feet to be filled. The link will be supplied by an ordinary truss bridge, will be swung into place and rested on the ends of the cantilevers. Here provision will be made for expansion and contraction by allowing play between the ends of the truss bridge and of the cantilevers. At the same time the bridge will be thoroughly braced so as to prevent danger from the lateral pressure of the wind. The "wave" motion perceptible on a suspension bridge will not be felt on the new structure. The total length of the bridge will be 895 feet. It will have a double track, and will be strong enough to bear two of the heaviest freight trains extending the entire length of the structure and under a side pressure of wind at 75 miles per hour, and even then it is to be strained to only one-fifth of its ultimate strength. The towers will not rest on bed-rock, as the rush of the river would sweep away any caissons or other works intended to be used for excavations, but the foundations will be in the large boulders that have dropped from the cliff during past ages, the crevices being filled in with cement, making a solid foundation. The top of the stone structures will be 50 feet above the water level, and from these the steel towers supporting the cantilevers will rise 130 feet. From the tower foundations up, the whole bridge will be of steel.

Emigrant Sleepers.

The Denver & Rio Grande car-shops, at Burnham, Col., have just turned out two exceedingly handsome emigrant sleepers. These two are the first completed of a complement of six, now in process of construction, which will be placed in service on the "Scenic Line." The exterior finish of the cars is equal in every respect to a Palace Pullman. Allen paper wheels are placed under the cars, which rest on Pullman trucks, thus securing the maximum of ease and comfort. The interior is a model of neatness and convenience. There is a cooking range at each end of the car for the accommodation of those who may desire to prepare their own meals, there are receptacles for ice water, patent ventilators, a spacious closet lavatory, and, in fact, every thing that the ingenuity of the car-builder could devise to add to the comfort of the passenger. These sleepers are longer than the regular passenger coaches, and have sleeping accommodations for 28 passengers each. The berths are capacious and ingeniously constructed, and can be made as comfortable as those in any sleeper. The interior decoration corresponds in elegance with the handsome exterior. The windows are large and filled with single panes of glass, free from flaws, and giving an unobstructed view. Sliding shutters are added, a convenience wanting in the majority of emigrant sleepers. Lighted by large and elegant lamps, heated, when heat is necessary, by improved furnaces, ventilated in the most approved fashion, clean and cool, these cars give the maximum of comfort at the minimum of cost to those who patronize them. The Denver & Rio Grande management certainly deserves credit for the exertions it is making to secure every convenience for the benefit of all its patrons, whether they be classed among the rich or poor. The cars began their first trip over the line filled with passengers who had taken advantage of an excursion rate to San Francisco.—*Denver Republican.*

Marble Veneer.

A writer in the New York *Record and Guide* says he has been shown a number of highly polished columns, mantle-pieces and other articles which, except to the eye and touch of an expert, appeared to be solid marble. Imitations of different kinds of wood were shown, and some pretty specimens of workmanship seen, a panel being especially noticeable, representing a stork in the water, surrounded by bulrushes, and holding a newly-caught fish in its mouth. The patentees claim that marble veneer is fireproof and waterproof, that it will not break, crack, peel or shrink. One piece of wood was shown, covered with the veneer, which had been ten days in water, and which was apparently not affected by the immersion. The veneer is applied to uneven as well as even surfaces, and is used for columns, pedestals, balusters, moldings, tilings and so forth, which are given the appearance of real marble. A similar veneer is said to have been used in Munich in 1830, and in a room of one of the royal palaces of Bavaria, and is at present to be seen in an excellent style of preservation. Marble veneer seems to be specially adapted for wainscoting ; it is made to appear like any kind of wood, and all colors and almost any material can be imitated. It is applied to metal, stone, plaster, wood and cement. Though but recently introduced, it has already met with encouraging success. Several architects of standing, says the writer, have expressed a high opinion of its appearance and usefulness and propose to use it. The great point made by the patentees, the Marble Veneer Company, is its inexpensiveness.

Effect of Passing Trains Upon Railway Structures.

At the meeting of the American Society of Civil Engineers, September 5, a paper was read by James L. Randolph, member of the society and Chief engineer of the Baltimore & Ohio Railroad, upon "Vibration, or the Effect of Passing Trains on Iron Bridges, Masonry and Other Structures." Mr. Randolph refers to the fact that double-track bridges are moved in the direction of passing trains and are consequently twisted, and strains are produced not provided for. Also that cattle stops and open culverts, where built of rubble work, have the walls shaken to pieces by vibration. The remedy he has supplied for these culverts and stops has been to build them of large stone as nearly the same size as possible. The tall, thin bridge piers and abutments on which iron bridges rest have their stone so much disarranged by vibrations as to make it necessary to secure them with timber and iron straps. Iron bridges resting on stone pedestals vibrate in this manner, and receive a return blow from the vibrations of the pedestal, particularly if the pedestal is of a light structure, but as the iron and the stone do not vibrate in the same period there must be times when the result is a movement in the direction of the force. The effect of this vibration has been particularly noticeable at the Harper's Ferry bridge, where there was a movement of four inches in four years. After the insertion of planks between the stone and iron, this movement ceased. Where the masonry of piers has a platform of timber between its foundation and solid rock, no displacement of stone has been noticed. Mr. Randolph contends that a monolith would be the best support for structures subject to vibration caused by strains, but that a monolith of the specific gravity of granite would give a damaging return blow. Timber would answer the purpose, but is perishable. The material which, in his opinion, is most serviceable is an artificial stone about two-thirds the weight of granite, compact, durable, and with very little elasticity.

A Mission Car.

Edwin A. Harris, of Fitchburg, for twelve years a railroad conductor, and connected prominently with the Railroad Men's Christian Associations in different section of th State, has for about nine months during the past two years traveled among railroad men in the South and West, holding religious meetings. Mr. Harris now proposes to build and equip a mission car, to be called "Bethlehem," and he has already procured from the Jackson & Sharp Co., of Wilmington, Del., a plan of the proposed car, the estimated cost of which is from $10,000 to $13,000. The proposition is made to churches, Sunday schools and to individuals to subscribe to a mission fund of $18,000, to be placed in the hands of a board of trustees, for the construction and equipment of a mission car, to be used in evangelistic work among railway men. This fund is to be divided into 1,800 shares of $10 each, and may be taken in single shares or blocks of any desired number. The car is to be constructed after plans and models suggested by practical railroad men, and is so arranged that it furnishes a room for meetings, and is also supplied with cooking and sleeping apartments for those engaged in the work. It is to be built to run over any ordinary gauge railroad. It is designed as a convenient headquarters for mission work among railway men, for the distribution of Bibles and reading matter, and is to be manned by workers of practical railway experience. It is believed a car commissioned in this service, stopping in the railway centers such length of time as the field demands, may be an efficient auxiliary to the agencies already established. Subscriptions may be sent, or plans and circulars giving further particulars will be furnished, on applications to E. A. Harris, Fitchburg, Mass.—*Boston Herald.*

Calling Names of Stations.

If persons in authority on railways who are pestering engineers about color-blindness and giving the public to understand there is great danger of accident from this cause would turn their attention to the brakeman and his language, they would be doing a great and real service. Calling of stations at every stoppage and announcing the next, would be of much benefit to travelers if it were not done in such a way that even those who know the station cannot recognize it. There seems to be a professional way to do this thing, which is adopted all over the country wherever we have traveled, and it is quite time that railway superintendents gave it serious attention. For many years we have traveled on a railway out of this city, and but seldom have we ever heard a brakeman call a station properly.

"*N-a-x-tation Lees bet!*" *N-a-x-tation B-o-r-g-e-r pi!* means nothing in any language, and the translation is that the next station is Elizabeth, or "the next station Bergen Point." The names are drawled out in a loud nasal tone, with the announcement of the fact and the name of the place all jumbled together, and this in such a hurry that it would seem that the man was in danger of his life from some cause.

The brakemen should be examined as to their ability to make a simple announcement in a loud, clear voice. They should be told to shut the door behind them when doing so, and to take time enough to speak plainly. By attention to these simple matters, the calling of stations would be a public service, instead of, as now, merely a piece of silliness.—*Mechanical Engineer.*

THE blow struck by a locomotive on a bridge, crossing at high speed, says the *Mechanical Engineer*, can be better estimated in a cab than anywhere else. The sensation is peculiar ; there is first a sinking as though the bottom was falling out of things, and subsequently a palpable blow, as though the engine had run into a hay stack, or something yielding. This is caused, doubtless, by the structure actually giving way under the first tremendous onset of 40 tons hurled upon it, and immediately recovering its elasticity. This refers to iron and wooden bridges.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

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INCREASING THE SPEED OF FREIGHT TRAINS.

Considering the remarkable improvements which have been effected on the road-bed and track of nearly all our railroads within the last fifteen years, it is reasonable to expect that transportation would be accelerated in a ratio nearly equal to the increase of safety. This has not, however, been the case. Passenger trains, to be sure, are moved considerably faster and with much greater regularity than they were fifteen years ago, but the mileage of freight cars has steadily decreased. In the days when trains were run on many roads at a speed exceeding 20 miles an hour, only at the risk of part of the journey being traversed in the ditch, there was good excuse for freight cars not making an average daily mileage of 100 miles. But in these days, when it has been proved that a speed bordering on 20 miles an hour is the most economical one at which freight trains can be moved, it seems a most extraordinary condition of affairs to find that the freight cars used for foreign business on many of our best equipped roads do not run enough to keep up this speed for three hours during each working day.

In a paper read before the last meeting of the American Society of Civil Engineers, Mr. William P. Shinn presented many remarkable facts respecting the dilatory movement of freight cars, and the light of his investigations is likely to clear the way for much-needed reforms. A leading cause for the slow movement of cars lies, no doubt, in the practice of certain roads retaining foreign cars for the purpose of performing local work. Some time ago a Western road lost some flat cars, and as they were short of that class of cars, an extensive search was instituted in quarters where the cars were suspected to have gone. The search proved unavailing, and the flats were given up for lost till they would return by the good will of those who held them. One day a train-master belonging to the road went East on business, and in passing a gravel pit where a train was at work he caught sight of the initials of his road on one of the cars. He found all the lost cars there, and the place was 400 miles from the nearest part of the road where they belonged. There is great looseness in the method of keeping car records where a case of this kind is possible; but the incident illustrates how ready some unscrupulous roads are to take advantage of this lack of accuracy. But long absence from home is not confined to roads with defective accounting systems. Roads like the Pennsylvania Railroad suffer grievously from lengthened absence of their cars on foreign roads. The superintendent of transportation of that road reported that their foreign-going cars were only making 42 miles each working day; and an estimate was made of cars that had been away on New England roads where the daily movement only reached 20 miles.

The principal remedy proposed for this growing evil, which is seriously paralyzing our transportation facilities, is strict accounting and a "per diem" charge for the time a car has been away. If a plan arranged in this way will impress upon subordinate officers of railroads the necessity of forwarding foreign cars as rapidly as they handle their own fast freight, some improvement will be effected. But that will not touch the origin of the worst trouble. The chief cause of delay is the absence of proper facilities for moving trains rapidly over our single-track roads. A track will be capable of taking care of a fair traffic under ordinary circumstances, but when a rush comes the road suffers from a chronic block of cars; and the business, instead of being accelerated when fast movement of cars is urgently necessary, actually becomes impeded. Although most of our track structures are now capable of withstanding the movement of an enormous traffic, the train service remains in about the same condition it was in forty years ago. The engines are heavier and the cars carry greater loads, but nothing has been done to secure safety while running trains at a proper speed. The same lack of braking power prevails. In fact every increase of train weight makes this evil greater, for the same number of brakemen is required to do the work as of old. Road-side stations are as innocent of protecting signals as in the days when locomotives weighed ten tons and pulled a few cars fully loaded with three tons of freight. The consequence is that the safety of trains is only secured by the engineers feeling their way along. The numerously recurring stations must be aproached with trains under full control, which means at a speed of six or eight miles an hour. By this system a heavy train is hardly got under way when the speed has to be slackened to approach a station. The process of getting a train along is therefore done by a series of efforts to get up speed, which is no sooner attained than the force generated has to be wasted on the brake-shoes. The surplus power expended to operate trains in this unsatisfactory manner, if applied in the proper direction, would do much to maintain a system of station signals, and to equip freight trains with good continuous brakes.

CAR-BUILDING RESOURCES OF THE SOUTH.

There is probably no region in the world that has such a wealth of resources as our Southern States for the building of good and serviceable freight cars at a comparatively small cost. Nature has provided an abundance of all kinds of material, of a quality the most desirable, and which can hardly be surpassed any where else. Oak timber has long been considered by most car-builders as indispensable for certain parts of the structure, and especially for end-sills and truck-framing; but the opinion is now gaining ground that Georgia pine makes as strong a sill as oak, if not more lasting, while it keeps in shape even better and is lighter in weight. So plentiful is this timber in the South that in many localities it can be laid down at the shops at the cost of cutting, sawing and transportation. It is claimed by many car-builders, and there is good reason for the claim, that yellow pine when used for siding on box-cars, increases the weight of the car from 1,500 to 2,500 pounds over what it would be if white pine were used. As an offset to this, it is also claimed that yellow pine siding $\frac{3}{4}$ths of an inch thick is as strong as white pine $\frac{7}{8}$ths thick, thus making the weight of each about the same. It is also said that yellow pine siding will not take and retain paint as well, that it will warp and twist, and that the resin will stew out under the paint and make trouble. This is the impression among many Northern car-builders; but those at the South, who speak from experience and from a practical knowledge of car service in a warmer and more trying climate, say that these drawbacks may be avoided by a careful selection of the timber for this purpose.

Poplar is also a favorite wood on Southern roads for car siding, and is even preferred to white pine, because it is lighter, harder, fully as durable and about as strong, while its cost in quantity is only $10 per thousand feet. It is found in great abundance in Kentucky, Tennessee, Georgia and other parts of the South. At the North, white pine is preferred by car-builders, although its cost is about the same as that of poplar; but wagon-makers, it is said, cannot get as good a price for a farm wagon with a white pine bed, because poplar is better for that purpose, and especially for outdoor work and rough usage. It may also be said that when master mechanics can choose their timber for locomotive cabs, they generally prefer black walnut first, poplar second, and white pine last, for the reasons given by the wagon-makers. Poplar varies a good deal in quality. That which grows in Kentucky and Tennessee appears to be the best. As between poplar and white pine for siding, it may be somewhat difficult to say which is best, but all things considered, the former is likely to be preferred for outside passenger car work or other substantial structures where a high finish is desired.

In addition to its timber resources the South has a vast, and as yet but partially developed wealth of coal and iron. The State of Georgia probably contains a greater variety of mineral riches than any other territory of the same area east of the Mississippi River, embracing not only coal and iron, but gold and precious stones. It is said on good authority that car wheels made from the irons of Alabama and Tennessee are guaranteed to make a mileage of 60,000 miles, the wheels weighing from 500 to 550 pounds. Car axles of first-rate quality are made in Georgia. Within a few miles of Chattanooga, coke is made which has been proved by analysis and practical use to be superior to that of McConnellville, Ohio. Labor also, both skilled and unskilled, appears to be cheaper at the South than at the North.

THE INSIDE FINISH OF PASSENGER CARS.

How to improve the inside finish of passenger cars by the use of new materials or by a more effective application of the materials now in use, is a question of considerable interest to car-builders. A repetition of old methods and styles or a monotonous adherence to any established standard will hardly satisfy the public craving for something new and novel. The use of natural woods, now so prevalent, is in all probability approaching its culmination, although the introduction of marquetry and carving may enable our builders to produce cars from these woods for some time longer that will satisfy even those who want a change for the sake of change, or for the novelty of the thing. Sooner or later, however, changes of a radical nature are pretty sure to be made, either to remedy existing defects or to gratify a desire for something new, or both. It will be generally admitted that there is one serious drawback in the exclusive use of natural woods, and that is the darkening of the natural colors to such an extent that with the turning of the varnish, the car very soon has a soiled and dingy look which makes it appear prematurely old. We know of several very beautifully finished cars scarcely two years old that already look as if they had been in service a much longer time. The reason for this is chiefly in the rapidity with which the lighter woods take on a dark yellow tint. With an oak ceiling, this deep tint, although considered beautiful in cabinet work, is not pleasing because it tends to make the car dark and somber. This effect is fortunately not so apparent in the night as in the day time, or such cars would make night trains especially gloomy. Mahogany finish, although dark, has the advantage of improving in appearance by growing richer as it grows darker, but some means of relieving the cheerless aspect of the solid mahogany finish now so much in vogue, are desirable.

The car-builder has a variety of resources at his command for this purpose, and the most prominent of these suggests the inquiry as to what can be done by the painter. We are aware that the idea of paint in connection with the interior finish of a modern passenger car will revive a recollection of some of the atrocities that were perpetrated years ago under the name of inside painting. It must be borne in mind, however, that car painting has advanced from its rude mechanical beginnings to the dignity of an art, and that the beauty of the present outside panel decoration suggests possibilities of inside finish that are worth considering. Since we have had natural wood ceilings, it would be hardly worth while to return to canvas head linings, but it is well worth a trial to find out whether these wooden lining-panels cannot be painted in such a way as to give a light and pleasing effect and afford a pleasant contrast with the natural wood moldings which are used to hold them in place. When these panels in the roof and between the windows have became darkened to such an extent as to make the car look old before its time, an experiment in painting might be tried, and very possibly with highly satisfactory results. The mahogany moldings will have only improved by age, and the panels themselves when properly treated will be in condition to take the paint kindly. Mottled and clouded grounds, with the foliage which is so commonly painted upon roof panels, could be used in a very effective way.

There is a variety of substances used for wall decoration, both plain and in relief, some of them approximating leather papers in style, and others, like certain kinds of Japanese paper, being really like leather, which could be used in car work in a most striking and beautiful manner, and would have the advantage of bearing in relief their own ornamentation, and only needing one or two flat tints to obtain almost any decorative effect that might be desired. There are, indeed, many places in a car where stamped leather could be applied to great advantage, not only as respects beauty, but durability. The only objection to anything of this kind, or to any kind of painting really artistic, would be the increased cost of the finish. But in view of the lavish and increasing expenditure that has been made for many years past for purely ornamental work on passenger cars, a little additional increase can

hardly be looked upon as a very important matter. The vital question is whether we are to get a full equivalent for the outlay. It is doubtless true that applied decoration in the way of good painting is no cheaper than fine cabinet finish, and it need not be if it is artistically just as good or better.

There is another combination that can be made with flat panels of plain color, which would be exceedingly rich and effective and not perhaps at the present time so costly as to be unsuited to the finer class of day cars. This is the introduction of somewhat elaborately carved belts above and between the windows. Carving is just now in the midst of a great revival, and its methods have undergone a complete revolution. Fifteen years ago hand carving was extensively used and was very popular. Two or three years later machine carving followed, and produced such uninteresting and shabby work as to practically kill the whole trade. Now, however, it is established on a new basis, and carving can be done at a lower price than has hitherto been supposed possible. Machinery is made to furnish the power while the workmen supply the brains and the artistic skill. Instead of its being necessary to remove every cubic inch of wood by means of a chisel or a gouge, a rotating cutter is used and the workman moves the wood in front of it, producing the same results that would be obtainable by a hand tool, but with a speed which is wonderful. In this connection it may be well to mention that tiles, both vitrified and those made of paper, are becoming deservedly popular for household decoration, and could to a certain extent be effectively applied to cars. Vitrified tiles, it is true, are rather heavy, but the limited extent that it would be desirable to use them in order to obtain the requisite decorative effect would not make the matter of weight a very serious one. The paper tiles are equally beautiful and durable, and are no more affected by wear and tear and exposure. Where the introduction of bits of bright color is desirable, either kind would be excellent in its way and could hardly be rivaled by anything else.

Suffice to say that the resources for new and charming effects in car ornamentation are by no means exhausted. Really good designs in carved work do not involve the expense they once did. And it may be well to say that the rage for the dark and somber in household decoration is perceptibly subsiding, and we are glad of it. In the clear atmosphere and brilliant sunlight of our climate it is not altogether satisfactory to have our houses, nor our cars (which are temporary houses for a vast portion of our population), garnished in funereal hues and somber shades. In cars the effect is to increase the blinding glare of the snow in winter and of the gusts of steam from the engine, by making the windows a blaze of light by contrast with their surroundings.

OPEN CARS IN TRAIN COLLISIONS.

The recent accident at the Hunter's Point terminus of the Long Island Railroad ought to serve as a warning to roads that are running open excursions cars at ordinary passenger speeds. Several of the Brooklyn and Coney Island roads, and possibly all of them have open cars which are merely platforms leaving seats placed upon them similar to those of an excursion horse car. There is no side framing whatever. The floor of the car is its only support. The roof is carried on the posts, and the end framing is little better than a paneled screen. In case of a severe accident to a loaded train, one can more easily imagine than describe what would probably be the result. It seems to have been a most fortunate thing that no cars of this class were in the front of the train that was wrecked. It seems altogether probable, if a train of these open cars encounters an obstruction, the cars will slide one on top of another, tearing off the posts and crushing their occupants in the most terrific manner, and we hardly see how it would be possible in such a wreck to escape an immense loss of life. The only reliance for safety in such a case is that the stress of the drawing and buffing is on a line with the sills, and consequently in case of an accident dependence is placed on this to prevent the cars from jumping, so that one floor will be raised above another. As these car floors are very solid and well braced, there was little reason to expect that they would give way even in a butting collision. But it is rather too much to hope that if an engine should run off an embankment these light bodies would keep in line, so as to prevent telescoping.

IRON VS. WOODEN-FRAMED CARS

Very much discussion has been provoked by the proposition to use iron instead of wood for the frames of tenders and cars. One locomotive superintendent has been reported as saying that he would prefer to use oak at $100 a thousand rather than iron for tender frames. He gives as his reason the fact that when the tender is run into and smashed up, the cost and trouble of straightening the frame is vastly greater than would be the case if wood had been employed. The details of the difficulties have been given with a minuteness which is very convincing, and we presume that the larger proportion of our car-builders labor under the impression that the cost of repairs in iron-framed cars would very considerably exceed that of wooden cars. We think this idea is a mistaken one because the basis assumed is not correct. Iron frames are very much superior to wood, not only in stiffness, but in strength, and consequently blows which might be expected to knock off an end-sill or smash the corner of a wooden car would cause no injury requiring repair to an iron frame. Next we have the fact that we do not build cars with special reference to cheapness of repairs, but rather to obtain the greatest amount of durability and freedom from the necessity of repairs. We believe that it will be found in the case of an iron car that, although it might be more difficult to repair in case of an accident, it would show such superior strength and such a decided increase in its life as to make up many times over for this one feature. Unfortunately, we have not at hand at the present moment the number of frame repairs as compared with the total number of cars running, but a car-builder in looking over his records and taking the total number of cars on his road or passing over it, and comparing it with the total number requiring extended repairs in the frame, will be able to satisfy himself on this point and decide whether the point we have made is valid or otherwise. It has been said in regard to the American locomotive that in very many instances the very best form and the most convenient arrangement have frequently been sacrificed in order to obtain a construction which would allow repairs to be made in the cheapest and most convenient manner.

LOCOMOTIVES AND SMOKE.

The municipal authorities of some of our principal cities have passed ordinances requiring railroad companies to take measures to abate the smoke nuisance from locomotives within city limits. The usual methods are to burn either coke or Lehigh coal on shifting engines, while passenger engines are required to have a bright, clear fire when within a distance of two miles from such limits. This is done on some roads by keeping the fire free from green coal by taking on a sufficient quantity of coke at the two-mile point to bring trains into the station and the engines from round-house. Other roads, however, depend on skillful firing, that is, by having a deeper fire of bright coal when the trains reach the city limits. This requires some tact on the part of the fireman. He must make his calculations a little in advance, and fire heavily so that on reaching the limits the smoke will have left the coals, of which there must be enough to bring the train in. A single shovelful of green coal will make smoke enough to cause an infraction of the prohibitory ordinance.

With regard to this smoke annoyance and the means for doing away with it, probably no one individual has experimented more successfully than Mr. H. M. Smith, the Master Mechanic of the St. Louis Bridge Co. and Tunnel Railroad. The necessity for a smoke consuming, or rather a non-producing smoke locomotive, is very great with this company, in order to keep the long tunnel clear of the nuisance. One of the devices of Mr. Smith consists of a Venetian blind damper in the smoke-arch just in front of the flues, and which, when closed, cuts off all or nearly all communication between the fire-box and smoke-arch, the train being hauled through the tunnel by the supply of steam in the boiler. It appears to be the result of all experiments in "smoke consuming" that it can be mitigated but not prevented entirely, and that this is owing more to skillful firing than to anything else. A large brick arch in the fire-box, however, has a good influence, because it presents a highly heated surface, against which the gases must pass, and which appears to help ignite the same. Brick arches burn out, and several inventors have aimed to supply their place with a water-leg, or deflector-leg, having communication with the water spaces. But these do not give as good results, from the fact that they do not present a hot surface, that is, not as hot as the fire-brick, as the water in this leg carries off the heat instead of retaining it; and so far as these legs are a help as a smoke-consumer their value is but imaginary.

Much has been written on the subject, and scientific men have shown the exact quantity of oxygen, etc., necessary to effect perfect combustion; but still the practical realization of the problem appears to be no nearer solved than it was twenty-five years ago. Every thing depends on the fireman's attention to the smoke-stack and fire-door. Other little details go far to assist, such as wet coal, and opening the blower and fire-door when the engine is running into a station. But the most effective remedy is the fire-door, which must be kept on the jar so long as black smoke is seen at the stack. On this point, the kind of fire-door has much to do. If the door has no damper in it, the air enters unequally and to one side, thus being only partially distributed, while a damper in the door allows of a more equal distribution of the air. This will be noticed by any one, for if the door has no damper and it is left partially open, it will be seen that the gases on the hinge side of the door are blacker than on the latch side, while with the damper arrangement the fire-box has a more equally colored flame or body of gases, because the air is more equally distributed and not allowed to flow into one side of the box only.

The want of sufficient time for the mingling of the air with the gases is the main stumbling block in the way of smoke consuming or smoke preventing in the locomotive. Many attempts to overcome this have been made by providing combustion chambers, by extending the fire-box into the shell of the boiler, with drop legs or hanging legs, etc., to retard or obstruct the straight shoot of the gases. We remember an engine of this kind, in which the flues were shortened to about six feet, the fire-box extending into the boiler shell the rest of the distance. One or two hanging-legs with several baffle-plates were provided, and on examination of the drawings with the black gases in the fire-box, produced by a plentiful use of india ink, but which rapidly changed by the use of vermilion and orange into a solid body of flame in the combustion chamber, the success of this device seemed assured, and the more so when we heard the inventor talk. Several of them were built, and poorer steamers or blacker smokers never worried a fireman. We have seen many other devices and arrangements for the same purpose since then, all like the former, making good showings so long as the inventor was on hand with a picked fireman, and coal, and train, and side-tracks, and an accommodating train dispatcher. But in every-day service they were a failure; and to sum up, the best smoke preventer we know of are a good fireman and a brick arch.

IF paper is to be introduced to any extent as a material in car construction, it would seem to be as well adapted to ceilings as to any other part of the structure, and we learn that it has already been very successfully applied in this way upon some of the passenger cars of one or two prominent roads. Stated briefly, the process may be described as follows: In the first place, a wooden former is made corresponding to the curve of the main or side roof of the car. On this former is laid or fastened a sheet of brown paper of fair quality and finish, and then a sufficient number of sheets in succession are pasted one upon another until the requisite thickness is obtained, each sheet being allowed to dry thoroughly before the next one is put on. Corn or silver gloss starch is used. The thickness of the combined sheets of paper does not exceed an eighth of an inch, or just enough to hold its shape. It is then painted on the back or top side to protect it from dampness, and the other side is prepared by sizing for decorative treatment, which may be as varied and elaborate as that of wood or canvas. It can be painted and grained or finished in colors, as may be desired, so as to imitate wood lining very closely. It can, of course, be put on in panels in the same way, with moldings over the joints. While it is not as cheap as canvas, it is less costly than wood, will last as long, and is considerably lighter in weight. Its liability to be injured by leaks in the roofs and begrimed by smoke and dust is probably about the same as that of any other material.

WARMING PASSENGER CARS.

The time is again at hand when railway passenger cars must be provided with artificial warmth to keep their occupants comfortable. A great many plans have been devised for doing this, some of them simple and comparatively inexpensive and others complicated and involving a large outlay in first cost and maintenance. To provide for the heating alone is easy enough. A close stove with a fire in it and some one to give it the needful attention is all that is necessary. But to regulate the temperature so as to suit fifty persons of different and varying physical conditions, and at the same time get rid of the foul air as it accumulates by replacing it with fresh and pure air, is quite another matter. We are not going to weary the reader with a stereotyped repetition of what has been so often said about the twin topics of car heating and ventilation, nor have we any new plans to suggest. There are plenty of them on trial now, or will be in a few weeks, and it is for railway men who have every opportunity to note and compare results, to determine which of the various methods is practically the safest, most economical and effective.

There are some sanguine people who think that the heating of each car with one or more coal or wood-burning stoves will at no distant day be done away with, and some method adopted to keep passengers warm without having any fire at all in the cars. However desirable this may be, our faith in its speedy realization is not strong. A dozen Sputen Duyvil accidents a year would not lead to any immediate or general disuse of stoves, for the obvious reason that people think more of keeping warm when they are in the cars than they do of the chances of being spitted and roasted. They are, as a rule, quite willing to take the chances; and they are also in favor of fresh, pure air for breathing, if it can be had without discomfort or risk of taking cold.

Coal or wood-burning stoves being for the present, at least, indispensable, that kind or pattern which provides approximately for all the requirements of uniformity in temperature and wholesome ventilation, is to be preferred. Such a stove must provide for the constant reception of a supply of fresh air from the outside to be circulated in a space between the heated stove and an outer casing, so as to be warmed before entering the car. It may be introduced at the bottom of the stove, and after passing around it a few times through compartments provided for that purpose, or up on one side and down on the other, be discharged into a pipe or flue running along the car side next the floor, and from thence distributed through perforations or registers, the impure air passing out in a corresponding quantity through openings in the roof, thus

keeping up a general circulation and a temperature nearly or quite uniform. The casing around the stove should at the same time never be hot enough to *cook* the air in contact with it, or give inconvenience to passengers who sit near by. The stove should also be well locked, and securely fastened to the floor to prevent its being overturned. In a word, the entire apparatus must be a heater and ventilater combined, and this is what is practically accomplished by a car-stove and heater that is already extensively used on the cars of the Pennsylvania Railroad and of other important lines.

THE NEW ENGLAND RAILROAD CLUB resumed its monthly meetings on Wednesday, Sept. 12. After the transaction of some routine business, there was a brief discussion upon freight car roofing, and the warming of passenger cars. Quite a large number of railroad men were present, and the future meetings of the club promise to be interesting and well sustained. The next regular meeting will be held on Wednesday evening, Oct. 10.

MR. H. H. HEWITT has resigned his position as Assistant Manager of the Pullman Palace Car Works, at Pullman, Ill., and has accepted the management of the mechanical department of the Suspension Car Truck Manufacturing Co. His office will be at the company's headquarters in the Mills Building, New York. Mr. Hewitt was for a long time connected with the car department of the Michigan Central Railroad shops in Detroit.

A LUMBER DEALER in St. Louis, Mo., writes us to say that yellow poplar as a material for the sides and roofs of cars, is superior to white or yellow pine. He says that it is used extensively at the South, where its merits are well known, and that a number of car-builders there would use it in preference to pine if the specifications would permit them to do so. It is said to be close grained, free from pitch and knots, requires less paint than white pine, and costs from $15 to $20 a thousand less than white pine of same grade. We should like to hear from some of the car-builders of the South on the merits of this timber.

A SUIT of some interest to shippers and carriers was recently decided in the Supreme Court of Minnesota. A car-load of stoves was shipped at Chicago by the Chicago & Northwestern Railway, and consigned to the plaintiff at Moorchead, Minn. The Chicago & Northwestern car, with the stoves, was transferred to the St. Paul, Minneapolis & Manitoba road without any inspection of the stoves, which were found to be badly broken on reaching their destination. Suit was brought by consignee, and damages recovered from the last-named road, the court deciding that, "Where goods have been transported by several successive carriers, and it appears that they were in good condition when delivered to the first carrier, the jury may presume, in the absence of evidence to the contrary, that the goods reached the hands of the last carrier in the same condition as when delivered to the first carrier. This rule is not modified or changed by the fact that the last carrier, instead of transferring the goods, transported them over its line in the foreign car in which it received them."

WE are told by a well-informed railway official that freight cars can be built now at lower prices than at any previous time within his recollection. His road, he says, has received bids for 30-foot box cars at $400, and he expected a reduction of $20 on this figure would be made before closing contract. He also quoted bids for ordinary 30-foot flat cars at $325, and coal cars of same length, with 28-inch sides, at $340, with the probability of a similar reduction. The specifications for these cars require Georgia pine side sills and oak intermediate, center and end sills, the box cars to have white pine siding and all to be inspected while building by an agent of the railway company. He also says that the parties making the bids are full of work and have orders six months ahead; and furthermore, they are of the opinion that car building generally is on the increase. This railway official is doubtless a strong advocate of economy in the cost of equipment and is naturally a little inclined to "bear" the market, otherwise what will the timber famine croakers say to the outlook from a lumber point of view.

THE regular annual meeting of The American Street Railway Association will be held at the Grand Pacific Hotel, in Chicago, commencing on Tuesday, Oct. 9. Papers on the following subjects will be read and discussed: Construction of Track; Propelling Power; Buildings; Labor and Wages; Collection of Fares; Removing Snow and Ice; Horseshoeing, and Heating and Lighting. The officers of the Association are: President, H. H. Littell, Gen. Man. Louisville (Ky.) City Railway Co.; First Vice-President, Wm. H. Hazzard, Pres. Brooklyn (N. Y.) City Railroad Co.; Second Vice-President, C. A. Richards, Pres. Metropolitan Railroad Co., Boston, Mass.; Third Vice-President, George B. Kerper, Pres. Mt. Adams & Eden Park Inc. Ry. Co., Cincinnati, O.; Secretary and Treasurer, W. J. Richardson, Sec. Atlantic Ave. Railroad Co., Brooklyn, N. Y. The Executive Committee consists of the President, Vice-Presidents, and Julius S. Walsh, Citizens' Railway Co., St. Louis, Mo.; Chas. Cleminshaw, Troy & Lansingburg Railroad Co., Troy, N. Y.; Tho. Lowry, Minneapolis (Minn.) Street Railway Co.; Jas. K. Lake, Chicago W. Division Railway Co.; and D. F. Longstreet, Union Railroad Co., Providence, R. I.

A New Departure in Railway Progress.

We receive a good many letters from people who desire to attract public attention to the merits of their inventions, and who ask our assistance in enabling them to do so. We print the following at the request of the writer, who has doubtless expended a good deal of thought and labor in perfecting an improved locomotive, the peculiar merits of which will be apparent from his description:

"Mr. Editor, Sir, if you think that the engine I propose will be a benefit to the public it would oblige me to print it in your paper as I am a poor man and not able to pay. I can make an engine to run upon the present railroad where it will not pay the present locomotive. I will give you the heads of it and then you can judge for yourself what it is worth for 1 horse power, the cost 20 dollars the weight 500 pounds per horse power the car and engine to be all in one the cost of running it per hour 40 cents, can run it 6 hours without stopping, it can be run 22 hours out of the 24 every day, no danger connected with it, the horse power is 33,000 pounds raised 1 foot high in a minute or 1 can run a 6 horse power for 120 cents an hour, it can stop upon any part of the road the same as a street car, it will carry passengers and mail to suit the public better where the gross earnings does not exceed 7,000, dollars a mile per year. What I intend it for is in a thinly populated country, they allow it costs 10 cents to stop the present locomotiv and I can stop for 2 cents, I will guarantee it to be the readiest and the cheapest and simplest fire engine of 1 horse power that is in existence, the way I propose to test it is to attach it to any pump and then any person can understand what it can do, it cost 18 cents a mile to run the present locomotive at 20 miles an hour which would be 3.60 cents which I can run 9 of my machines for the same amount per hour, I am not comparing my machine with what the locomotive can earn or draw, it is what it does earn and draw, what I want is a conveyance every hour or half hour, the traffic that my machine will suit is local and that is what the present locomotive does not. I will show it to suitable parties on conditions, I don't want want to sell it, what I want is a company to take it and give me so much per horse power for every one that is made and commence with 1 horse power machine first so there is no party has any thing to lose, yours in the cause of progress."

We omit the name and address of the writer, but will take pleasure in placing him in communication with parties who may desire it by advising us to that effect.

Book Notices.

PAINTING AND PAINTERS' MATERIALS: A book of Facts for Painters and those who use or deal in Paint Materials. Treating of Oils in all their various relations to Paint and Colors; of Pigments, their qualities, uses, changes, adulterations and tests; Varnishes, their materials, comparative qualities, uses in decoration, and their mysteries and changes in use; of Driers, and their effect in the drying of paint and varnish; of Wood and Iron as Preserved by Paint, and their relation to cracking and peeling of paint and varnish; of the Management of Paint Shops, carriage painting and car painting; of Decoration and the use of Color, and of the Effect of Paint on Health. By Chas. L. Condit, under the supervision of Jacob Scheller. 461 pp. Cloth. $2.25. New York: *The Railroad Gazette*, 73 Broadway, New York.

The authors of this book seem to have grappled with all the intricate and difficult details and technicalities of a most difficult subject, and so far as appears from a hasty glance at its contents, their work has been thoroughly well done. Decorative painting in its various branches has advanced to the dignity of a profession. It is both an art and a science, the mastery of which requires a great deal of careful investigation both in its theoretical and practical bearings. This book, embodying as it does the results of much research into the chemistry of materials as evolved in the laboratory, is a text-book of ingredients used in painting and their varied treatment, that every painter cannot fail to appreciate. The knowledge of the art which is derived only from shop practice and a mechanical use of the brush, is very good as far as it goes, but the painter who relies on the practical routine of the shop alone will never reach the highest proficiency in his vocation. A little book-learning is indispensable along with it, to give him an insight into the theoretical elements of the art, so they can be conjoined with the practical with mutual advantage. This, it has been the aim of the authors of this work to furnish, and the more it is studied the more its merits will be recognized, until it will become a necessary hand-book for master painters, and for every inferior workman who is ambitious to become something more than a clever adept in the mere mechanics of his art.

RECENT LOCOMOTIVES: Illustrations, with Descriptions and Specifications and Details, of Recent American and European Locomotives, reprinted from the *Railroad Gazette*.

This is the title of a large, attractive and handsomely printed volume containing illustrations of seventy locomotives with specifications and details of construction as originally published in the *Railroad Gazette* during the past twelve years, comprising a large number built in American contract and road shops, and also several European locomotives. There are 88 full-page plates and 46 pages of descriptive matter. The size of pages, exclusive of margin, is 9 × 13½ inches. The publication is not intended to be a complete and systematic treatise, but is simply a collection in a single volume of the engravings and descriptive details heretofore published in that journal, in order to meet an existing demand, more particularly for the engravings, which are, with but few exceptions, of superior excellence. Both the descriptive matter and illustrations are admirably arranged for convenient reference, aided by a table of contents and general index. The collection embraces the leading varieties of recent construction in freight, passenger and narrow-gauge engines, with valve-gear and other attachments, and can hardly fail to meet the demand which suggested its compilation. Published by the *Railroad Gazette*, 73 Broadway, New York. Retail price, $5.

THE RAILWAY VELOCIPEDE, manufactured by the Kalamazoo (Mich.) Railroad Velocipede Co., is a great improvement upon the common hand-car. It has two driving wheels and another smaller wheel attached to a trailing arm. Its construction is such that its operation and movement are not retarded by the usual friction of a brace-wheel. Having a driving wheel on each rail, the car is balanced by the weight of the operators, who sit facing forward, and it can not be accidentally upset or tipped off the track, no matter how fast it may run. On straight and level track it can be run either forward or backward. Its usual speed is from 15 to 20 miles an hour, although it can be run 25 miles an hour. The materials of which it is made are iron and steel, except lever and seat. There is no wearing of wood or liability to get loose and rickety, and no danger in passing curves. The foot-treadle is folding and adjustable, the axle revolves under 4-inch friction rollers, and a brake is attached by which the car can be stopped within eight or ten feet.

EAMES VACUUM DRIVER-BRAKES.—The Eames Vacuum Brake Co., of Watertown, N. Y., have issued a handsomely printed circular pamphlet with illustrations, showing some of the methods for applying their brakes to locomotives. These methods differ according to the kind and quality of engine, the difference being chiefly in the arrangement of levers and the location of the diaphragm, which is placed sometimes under the foot-board, under the front end of boiler, back of smoke arch, or is attached to front of cab frame. The company have equipped several hundred freight and switching engines with these brakes, and they are all giving satisfactory results, especially on the Fitchburg Railroad, the officials of which report a great saving in the handling of their trains in this manner. Vacuum brake equipments for freight cars are offered by the company at $25 per car.

THE PRATT & WHITNEY CO.—We are in receipt of an illustrated catalogue recently issued by this company containing descriptions of machinery and tools manufactured by them at their works, in Hartford, Conn. The list embraces the numerous classes of tools for which the company has won a deserved reputation for excellence of design, exactness, convenience and adaptation to the purposes for which they are intended. Every improvement in the arrangement of parts, accuracy of fitting and other essentials of perfect mechanism, has been introduced to insure strength, durability and usefulness. The efforts of the company to secure greater exactness in the cutting of screw-threads, with the view of bringing about the use of standard sizes that will be unvarying, are widely appreciated by car-builders and railway mechanics. All taps and dies made in accordance with the Sellers system, otherwise called the United States, or Franklin Institute system, are made by special machinery so as to conform to the gauges before being hardened. The steel used is of a superior quality made specially for the purpose, and the hardening is done by the most skillful workmen. Most of the machines and tools described in the catalogue are kept in stock or are in process of construction, so that any one of any class or size can be furnished complete on short notice. The company was organized in 1869 with a capital stock of $350,000, which has since been increased to $500,000. In the machine shops are 250 lathes of various kinds, 70 planers, 30 drilling machines, 30 milling machines, 6 screw machines, 6 gear and rack cutters, 7 boring mills and a number of other machines in addition to the tools used in the pattern shop. When all these are running employment is given to about 680 men.

Our Directory.

We note the following changes since our last issue:

Atchison, Topeka & Santa Fe.—O. C. Wheeler has resigned the position of General Manager.

Central Iowa.—D. N. Pickering has resigned the position of General Superintendent on account of advancing age.

Chesapeake & Ohio.—W. H. Thomas has been appointed Master Mechanic in charge of the shops at Huntington, W. Va. He was recently on the Louisville & Nashville road.

Chicago, Milwaukee & St. Paul.—Georgo O. Clinton is appointed Superintendent of the Chicago & Milwaukee Division.

Cincinnati, Hamilton & Dayton.—C. J. Hepburn (recently of the Evansville & Terre Haute) has been appointed Superintendent in place of Geo. S. Griscom, resigned.

Columbia & Greenville.—G. S. Talcott has been appointed Superintendent in place of J. W. Fry, who has gone to the East Tennessee, Virginia & Georgia.

East Tennessee, Virginia & Georgia.—J. W. Fry (heretofore of the Columbia & Greenville) has been appointed Superintendent of the Atlanta Division in place of Mr. T. D. Kline, who goes to the Central Railroad of Georgia.

Evansville & Terre Haute.—C. J. Hepburn having left this road to go to the Cincinnati, Hamilton & Dayton, President D. J. Mackey will for the present act as Superintendent also.

Louisville & Nashville.—W. P. Pike, Master Mechanic, has been transferred from the Bowling Green shops to Henderson to succeed W. H. Thomas; and J. G. Clifford succeeds Mr. Pike at Bowling Green.

Nashville, Chattanooga & St. Louis.—John W. Thomas, heretofore General Superintendent, has been appointed General Manager.

Northern Central.—E. B. Westfall has been appointed Superintendent of the Susquehanna Division, vice Tho. Gucker, transferred. Mr. Westfall was previously on the Philadelphia & Erie.

Owensboro & Nashville.—O. M. Dunn has been appointed Superintendent, vice R. S. Brevier, resigned.

Richmond & Alleghany.—G. W. Agee has resigned as Superintendent, and the office is abolished.

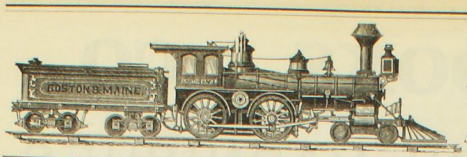
Syracuse, Chenango & New York.—The name of this road has been changed to Syracuse, Ontario & New York. It is now owned by the New York, West Shore & Buffalo.

Employment.

Advertisements will be inserted under this heading for one dollar for each insertion.

WANTED.—In the Passenger Car Department of a leading railway repair shop a first-class mechanic as Foreman. Must have had from 12 to 15 years' practical experience on all classes of coach work. Must also be a man with family, quick and active, of strict sobriety and willing to reside near his work. Best of reference required. Address K, office of NATIONAL CAR-BUILDER.

WANTED.—By a first-class Mechanic and Draughtsman who is thoroughly familiar with all kinds of Car Work, a position either in an office or as Foreman. Can give best of references from former and present employer. Address F. H. G., office of NATIONAL CAR-BUILDER.



MANCHESTER LOCOMOTIVE WORKS,

MANUFACTURERS OF

LOCOMOTIVES,

AND THE

AMOSKEAG STEAM FIRE-ENGINE.

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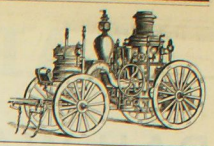
ARETAS BLOOD, Agent, Manchester, N. H.



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BOSTON, MASS.,

MANUFACTURERS OF

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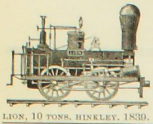
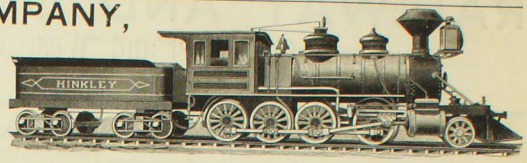
FOR ALL GAUGES.

Best workmanship and interchangeability of parts guaranteed.



LION, 10 TONS, HINKLEY, 1839. GREELY S. CURTIS, Treas. FRANKLIN D. CHILD, Supt.



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ESTABLISHED 1831.

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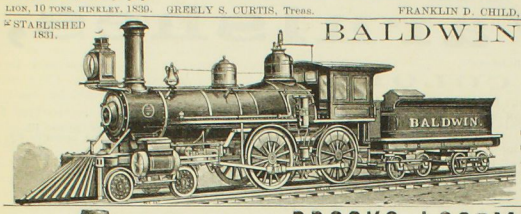
WM. P. HENSZEY,
EDW. LONGSTRETH,
JOHN H. CONVERSE.



LOCOMOTIVE ENGINES,

CAPACITY 600.

Adapted to every variety of service, and built accurately to standard gauges and templates. Like parts of different engines of same class perfectly interchangeable.

Passenger and Freight Locomotives, Mine Locomotives, Narrow Gauge Locomotives, Steam Street Cars, etc. Illustrated Catalogues furnished on application of customers. All work thoroughly guaranteed.

BROOKS LOCOMOTIVE WORKS,

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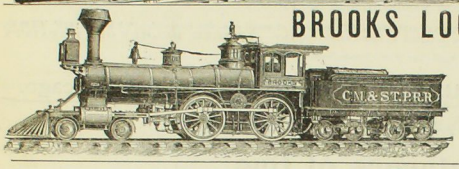

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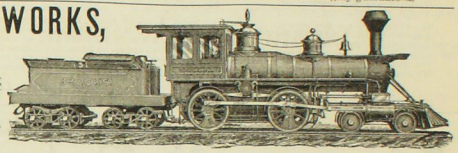
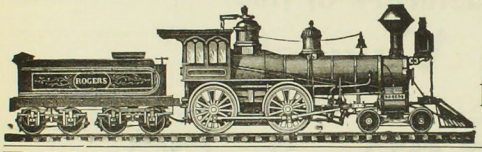
H. G. BROOKS, Pres't and Supt.

M. L. HINMAN, Sec'y and Treas.





ROGERS LOCOMOTIVE AND MACHINE WORKS,

PATERSON, N. J.

New York Office, 44 Exchange Place.

Manufacturers of Locomotive Engines and Tenders and other Railroad Machinery

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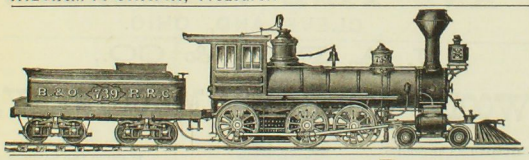
R. S. HUGHES, Secretary. } PATERSON, N. J.
WM. S. HUDSON, Sup't.

R. S. HUGHES, Treas., 44 Exchange Place, New York.

RHODE ISLAND LOCOMOTIVE WORKS,

PROVIDENCE, RHODE ISLAND.

EARL PHILIP MASON, Vice-President. CHARLES FELIX MASON, President. ARTHUR LIVINGSTON MASON, Secretary
WILLIAM P. CHAPIN, Treasurer. WILLIAM H. FENNER, Jr., Agent.



PITTSBURGH LOCOMOTIVE AND CAR WORKS

PITTSBURGH, PA.

MANUFACTURERS OF

Locomotive Engines for Broad or Narrow Gauge Roads,

From standard designs, or according to specifications, to suit purchasers.

Tanks, Locomotive or Stationary Boilers Furnished at Short Notice

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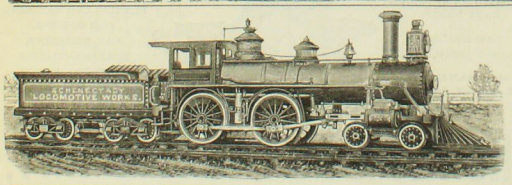
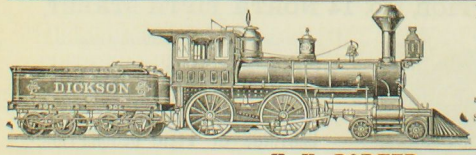


SCHENECTADY LOCOMOTIVE WORKS.

CHAS. G. ELLIS, President. EDWARD ELLIS, Treasurer.
WALTER McQUEEN, Vice-President.

SCHENECTADY, N. Y.



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Scranton and Wilkes-Barre, Pa.,

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LOCOMOTIVES FOR EVERY KIND OF SERVICE.

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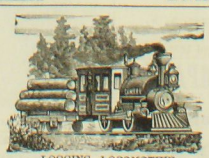

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DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 60 m. 3 lo. 62 cars.
C. E. Durkee, *Supt* .... Saratoga, N. Y.
Jacob Myers, *M. M.* .... Saratoga, N. Y.
Jas. J. Traver, *M. C. B.* .... Saratoga, N. Y.
Alabama Great So'n R. R. (*See Cin., N. O. & T. P.*)
Albany & Susquehanna R. R. (*See D. & H. Canal Co.*)
Albert Ry. 4-8½ g. 51 m. 3 lo. 32 cars.
G. A. Robinson, *Manager* .... Hillsboro, N. B.
Jas. McKay, *M. M. & C. B.* .... Hillsboro, N. B.
Allegheny Valley R. R. 4-9 g. 259 m. 70 lo. 2200 c.
David McCargo, *Gen. Supt. & Pur. Agt.*; and
C. B. Price, *Supt.* (Riv. Div.) .... Pittsburg, Pa.
A. A. Jackson, *Supt.*(L.G.Div.).Reynoldsville,Pa.
Geo. W. Glass, *M. M.* .... Verona, Pa.
R. Gunning, *M. C. B.* .... Verona, Pa.
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, *Supt. & Pur. Agt* .. Annapolis, Md.
John L. Beall, *M. Mach* .... Annapolis, Md.
Arkansas Midland R. R. 3-6 g. 48 m. 4 lo. 45 cars.
A. H. Johnson, *Pr. & Gen. Man* .... Helena, Ark.
J. B. Johnson, *M. M. & M. C. B.* .... Helena, Ark.
Ashland Coal & Iron Ry. 4-8½ g. 30 m. 7 lo. 425 c.
Douglas Putnam, Jr., *Gen. Supt* .. Ashland, Ky.
Robt. Peebles, *Pur. Agt* .... Ashland, Ky.
E. M. Roberts, *M. M.* .... Ashland, Ky.
Ashtabula & Pittsburgh Ry. (*See Penna. Co.*)
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, *Supt. & Pur. Agt.* . Spart'b'g, S.C.
Wm. Platt, *M. M.* .... Spartanburg, S. C.
W. B. Brown, *M. C. B.* .... Spartanburg, S. C.
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 1,900 m. 347 lo. 9,607 cars.
Gen. Man. .... Topeka, Kan.
D. J. Chase, *Gen. Supt* .... Topeka, Kan.
W. W. Allen, *Asst. Supt* .... Topeka, Kan.
Geo. Hargraves, *Pur. Agt* .... Topeka, Kan.
Geo. Hackney, *Supt. Lo. & Car. Dept.* do.
Clem. Hackney, *Asst.Sup.L. & C. Dept.* do.
Eastern Div.: D. J. Chase, *Supt.* .. Topeka, Kan
Henry Hull, *G. F. Car Dept* .... Topeka, Kan
John Fagan, *M. M.* .... Atchison, Kan.
J. M. Smith, *M. M.* .... Kansas City, Mo.
Alfred Taylor, *M. M.* .... Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt.* Nickerson, Kan.
W. Y. Johnson, *M. M.* .... Nickerson, Kan.
J. Q. Adams, *M. M.* .... Dodge, Kan.
W. Div.: W. W. Borst, *Supt* .... La Junta, Col.
A. C. Stiles, *M. M.* .... La Junta, Col.
D. H. Dotterer, *M. M.* .... Raton, N. M.
So. Div.: Geo. L. Sands, *Supt* .... Las Vegas, N.M.
L. H. Waugh, *M. M.* .... Las Vegas, N. M.
Rio G. Div.: Geo. L. Sands, *Supt.* Las Vegas, N.M.
J. H. Holman, *M. M.* .... Wallace, N. M.
J. W. Sager, *M. M.* .... San Marcial, N. M.
H. P. Olcott, *M. M.* .... Deming, N. M.
Atlanta & West Point R. R. (*See Western of Ala.*)
Atlantic & Pacific R. R. 4-8½ g. 286 m.
F. W. Smith *Gen. Supt* .... Albuquerque, N. M.
Geo. Chalender, *Div. Supt.* .Albuquerque, N. M.
D. Hardy, *Div. Supt* .... Williams, Ar.
Geo. Chalender, *Supt. M. P. & M.* do.
D. B. Sibley, *Pur. Agt* .... Chicago, Ill.
Augusta & Knoxville R. R. 30 miles.
Gen. Supt & M. M. .. Augusta, Ga.

B

Baltimore & Ohio R. R.
4-8½ g. 1,539 m. 546 lo. 14,862 cars.
N. S. Hill, *Pur. Agt* .... Baltimore, Md.
E. Ohio Riv. Div. 4-8½ g. 972 m.
W. M. Clements, *Mast. Trans* .. Baltimore, Md.
A. J. Cromwell, *Act. M. of M* .. Baltimore, Md.
L. Packard, *M. C. B.* .... Baltimore, Md.
I. N. Kalbaugh, *M. M.* .... Baltimore, Md.
Wm. Edwards, *M. M.* .. Martinsburgh, W. Va.
Sam. Houston, *M. M.* .... Piedmont, W. Va.
Robert Maxwell, *M. M.* .... Cumberland, Md.
S. B. Crawford, *M. M.* .... Grafton, W. Va.
Alex. Laird, *M. M.* .... Parkersburg, W. Va.
Chas. Hirsch, *M. M.* .... Wheeling, W. Va.
Pitts. Div.: T. M. King, *Gen. Supt* .. Pittsburg, Pa
J. E. Sampsell, *Asst. M. of M.* Connelsville, Pa.
Trans-Ohio Divs.: B. Dunham, *G. Man* .. Newark, O.
W. H. Harrison, *Asst. M. of Mach* .. Newark, O.
E. L. Weisgerber, *M. M.* .... Newark, O.
H. M. Ingler, *M. M.* .... Bellaire, O.
O. B. Perkins, *M. M.* .... Zanesville, O.
Andrew Beckert, *M. M.* .... Sandusky, O.
F. J. Gunther, *M. M.* .... Chicago Junction, O.
Chi. Div.: *Gen. Supt* .. Chicago, Ill.
Benj. Lowther, *M. M.* .... Garrett, Ind.
W. H. Wilkinson, *M. M.* .... Kingston, Ill.
Baltimore & Philadelphia. 4-8½ g. 20 m. 4 lo. 35 c.
D. Connell, *Supt* .... Wilmington, Del.
Baltimore & Potomac R. R. (*See Penna. R. R.*)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt* .... Bangor, Me.
C. S. Nason, *M. M.* .... Bangor, Me.
J. W. Comins, *M. C. B.* .... Oldtown, Me.
Barclay R. R. 4-8½ g. 16 miles.
F. F. Lyon, *Supt* .... Barclay, Pa.
J. A. Hardenburg, *Pur. Agt* .. 21 Cort. st., N. Y.
Wm. Johnson, *M. M.* .... Towanda, Pa.
Bedford, Springville, Owensburg & Bloomfield Ry.
3 g. 41 m. 5 lo. 65 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.*; and
Capt. Geo. Elliott, *M. M.* .... Bedford, Ind.
Richard G. Elliott, *M. C. B.* .... Bedford, Ind.
Bellaire, Zanesville & Cin. Ry. Co. 3 g. 42 m. 3 lo. 29 c.
S. J. Cochran, *Mast. Trans* .... Bellaire, O.
Bell's Gap R. R. 3 g. 23 m. 4 lo. 130 cars.
R. G. Ford, *Supt* .... Bellwood (P. O.), Pa.
A. Zimmerman, *M. C. B.* .... Bellwood, Pa.
Bennington & Rutland Ry. 4-8½ g. 9 m. 10 lo. 214 c.
F. C. White, *Supt. & Pur. Agt.* .Bennington, Vt.
G. W. Blanchard, *M. M.* .... Rutland, Vt.
Bingham, Canyon & Camp Floyd, and Wasatch & Jordan Valley R. R.'s.
3 g. 44 m. 7 lo. 390 cars.
J. G. Kennedy, *Gen. Man.* .Salt Lake City, Utah
Geo. M. Young, *Supt* .... do. do.
Bodie Lumber Co. 3 g. 34 miles.
Thomas Holt, *Supt. & Pur. Agt* .... Bodie, Cal
E. M. Luckett, *M. M. & C. B.* .... Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 36 m. 7 lo. 107 c.
H. M. Witter, *Gen. Man* .... Worcester, Mass.
Chas. F. Brigham, *M. M.* .... Worcester, Mass.
Boston Concord, Montreal & White Mts. R. R.
4-8½ g. 167 m. 34 lo. 677 cars
W. A. Stowell, *Supt* .... Lake Village, N. H.
Geo. W. Storer, *Pur. Agt* .... Boston, Mass.
R. Adams, *M. M.* .... Lake Village, N. H.
G. A. Ferguson, *Asst. M. M.* .. Lake Village, N. H.
L. D. Pickering, *M. C. B.* .... Lake Village, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 65 m. 18 lo. 1,038 cars.
H. L. Morrill, *Gen. Man* .... Saratoga, N. Y.
C. H. Cory, *Supt* .... Mechanicville, N. Y.
J. H. Wilder, *Pur. Agt* .... Mechanicville, N. Y.
C. H. Corey, *M. M.* .... Mechanicville, N. Y.
John S. Ellis, *M. C. B.* .... Mechanicville, N. Y.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 5 lo. 46 c.
C. A. Hammond, *Supt. & P. Agt.* Boston, Mass.
J. L. Folsom, *M. M.* .... Boston, Mass.
John Coghlan, *M. C. B.* .... Boston, Mass
Boston & Albany R. R. 4-8½ g. 372 m. 245 lo. 6,111 c.
W. H. Barnes, *Gen. Supt* .... Boston, Mass.
E. Gallup, *Asst. Supt* .... Springfield, Mass.
A. B. Underhill, *Supt. M. P.* .. Springfield, Mass.
F. D. Adams, *Gen. M. C. B.* .... Allston, Mass.
H. B. Chesley, *Div. Supt* .... Boston, Mass.
G. H. Colby, *Div. M. M.* .... Boston, Mass.
C. E. Grover, *Div. Supt* .... Springfield, Mass.
H. W. Eddy, *Div. M. M.* .... Springfield, Mass.
J. B. Weston, *For. Car Sh.* Springfield, Mass.
W. H. Russell, Jr., *Div. Supt.* E. Albany, N.Y.
T. B. Purvis, *Div. M. M.* .. East Albany, N. Y.
J. F. Doran, *For. Car Sh.* .. East Albany, N. Y.
Boston & Lowell R. R.
4-8½ g. 140 m. 73 lo. 1,231 cars.
C. H. Mellen, *Supt.* .... Boston, Mass.
F. H. Nourse, *Pur. Agt* .... Boston, Mass.
J. F. Crockett, *Supt. T. & Mach* .. Boston, Mass.
Boston & Maine R. R. 4-8½ g. 206 m. 89 lo. 2,100 c.
J. T. Furber, *Gen. Supt. & P. A.* . Boston, Mass.
Geo. J. Fisher, *Pur. Agt* .... Boston, Mass.
Wm. Smith, *M. M.* .... Boston, Mass.
D. C. Richardson, *M. C. B.* .... Lawrence, Mass.
Boston & Providence R. R. 4-8½ g. 67 m. 52 lo. 1,006 c.
A. A. Folsom, *Gen. Supt* .... Boston, Mass.
Geo. Richards, *M. M.* .... Roxbury, Mass.
Jno. Lightner, *M. C. B.* .... Roxbury, Mass.
Bradford, Bordell & Kinzua R. R. 3 g. 42 m. 6 lo. 80 c.
B. C. Williams, *Gen. Man. & P. A.* . Bradford, Pa.
John Delaney, *M. M. & C. B.* .... Bradford, Pa.
Bradford, Eldred & Cuba R. R. 3 g. 54 m. 6 l. 132 c.
B. C. Williams, *Gen. Man. & P. A.* . Bradford, Pa.
Jno. Delaney, *M. M. & C. B.* .... Bradford, Pa.
Breakwater & Frankford R. R. (*See Junc. & Break.*)
Brighthope Ry. 3 g. 37 m. 3 lo. 193 cars.
Jas. R. Worth, *Supt* .... Richmond, Va.
A. Gary, *Supt. Way & Works.* Winterpock, Va.
Alex. Calder, *M. M.* .... Chester, Va.
Brunswick & Western R. R. 5 g. 172 m. 13 lo. 170 c.
H. S. Morse, *Gen. Man.* .... Brunswick, Ga.
R. D. Meader, *Supt* .... Brunswick, Ga.
Buff., N. Y. & Phila. Ry. 3 & 4-8½ g. 242 m. 48 lo. 3,500 c.
Oliver Watson, *Gen. Man* .... Buffalo, N. Y.
Geo. S. Gatchell, *Gen. Supt* .... Buffalo, N. Y.
W. W. Halsey, *Asst. to G. Supt.* Buffalo, N. Y.
J. H. Poole, *Pur. Agt* .... Buffalo, N. Y.
Allen Vail, *Supt. M. P. & M.* .... Buffalo, N. Y.
Buff. Div.: J. T. Gardiner, *Supt* .... Buffalo, N. Y.
Roch. Div.: R. M. Patterson, *Supt.* Rochester, N. Y.
N. G. Div.: J. W. Watson, *Supt* .... Olean, N. Y.
Riv. Div.: A. Vandivort, *Supt* .... Buffalo, N. Y.
Pitts. Div.: E. H. Witter, *Supt.* .... Pittsburg, Pa.
Buff., Pittsburg & W'n R. R. 4-8½ g. 156 m. 33 l. 975 c.
O. Watson, *Gen. Supt. & Pur. Agt.* Buffalo, N. Y.
E. H. Witter, *Asst. Supt* .... Oil City, Pa.
H. J. Bookhammer, *M. M.* .... Oil City, Pa.
John Monks, *M. C. B.* .... Oil City, Pa.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 713 m. 73 lo. 2,738 cars.
C. J. Ives, *Gen. Supt* .... Cedar Rapids, Ia.
Robt. Williams, *Supt* .... Cedar Rapids, Ia.
T. Stickney, *Pur. Agt* .... Cedar Rapids, Ia.
R. W. Bushnell, *M. M. & C. B.* Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 35 m. 4 lo. 64 c.
G. L. Linsley, *Gen. Man. & Supt.* Burlington, Vt.
F. G. Brownell, *M. M., M. C. B. & P. A.* do.
Burlington & Mo. Riv. R. R. (in Neb.) (*See C. B. & Q.*)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 85 c.
John T. Gerry, *Supt* .... Burlington, Ia.
Burlington & Ohio River R. R.
Gen. Man. & Pur. Agt. Chicago, Ill.
J. K. Lape, *Supt. of Equip* .... Chicago, Ill.

C

California Southern R. R. 4-8½ g. 127 m. 13 lo. 301 c.
J. N. Victor, *Supt* .... National City, Cal.
Berkley Powell, *Mech. Supt.* .National City, Cal.
Camden & Atlantic R. R. 4-8½ g. 79 m. 16 lo. 264 c.
W. N. Bannard, *Supt* .... Camden, N. J.
Rufus Hill, *M. M.* .... Camden, N. J.
Samuel Wills, *M. C. B.* .... Camden, N. J.
Canada Southern Ry. 4-8½ g. 403 m. 89 l. 3,367 c.
W. P. Taylor, *Gen. Man* .... Buffalo, N. Y.
A. F. Howland, *Pur. Agt* .... St. Thomas, Ont.
Rob't Potts, *Gen. M. C. B.* .... St. Thomas, Ont.
Can. Div.: E. P. Murray, *Supt.* .St. Thomas, Ont.
Robert Potts, *M. C. B.* .... St. Thomas, Ont.
U. S. Div.: E. P. Murray, *Supt.* .... Detroit, Mich.
O. P. Dunbar, *M. M.* .... Grosse Isle, Mich.
Canadian Pacific R. R. 4-8½ g. 551 m. 26 lo. 473 c.
W. C. Van Horne, *Gen. Man* .... Winnipeg, Man.
Eastern Div. 240 m. 16 lo. 276 cars.
Archer Baker, *Gen. Supt* .... Montreal, Can.
Tho. Irwin, *Mech. Supt* .... Brockville, Ont.
Western Div. 311 m. 10 lo. 207 cars.
J. M. Egan, *Gen. Supt* .... Winnipeg, Man.
T. W. Shaughnessy, *Pur. Agt.* Winnipeg, Man.
F. C. Butterfield, *M. M. & M. C. B.* Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 47 m. 3 lo. 31 c.
J. S. Morrison, *Gen. Supt* .... Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B.* .Fayetteville, N. C.
Carolina Central R. R. (*See Ral. & Aug.*)
Carson & Colorado R. R. (*See Va. & Truckee*).
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 577 c.
C. W. Chapman, *Supt. & P. A.* Catasauqua, Pa.
J. Thomas, *M. M.* .... Hokendauqua, Pa.
Chas. J. Holbach, *M. C. B.* .... Catasauqua, Pa.
Central and South-Western Railroads (Ga.).
5 g. 975 m. 127 lo. 1,858 cars.
W. G. Raoul, *Pres* .... Savannah, Ga.
Wm. Rogers, *Gen. Supt* .... Savannah, Ga.
C. H. Carson, *Pur. Agt* .... Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M.* .... Savannah, Ga.
John McCann, *M. M.* .... Augusta, Ga.
F. Devine, *For. C. Sh* .... Savannah, Ga.
So.-West'n Div.: T. D. Kline, *Supt* .... Macon, Ga.
D. M. Gugel, *M. M.* .... Macon, Ga.
James A. Knight, *M. C. B.* .... Macon, Ga.
Central R. R. of N. J. 4-8½ g. 544 m. 294 lo. 27,198 c.
W. W. Stearns, *Gen. Supt* .... Elizabeth, N. J.
B. W. Burnett, *Pur. Agt* .... New York, N. Y.
Cen Div.: W. Woodcock, *M. M.* Elizabethport, N. J.
Geo. Hackett, *M. C. B.* .... Elizabethport, N. J.
C. G. Williams, *M. M.* .... Jersey City, N. J.
John Alpaugh, *M. M.* .... Phillipsburg, N. J.
Long Br. Div.: H. H. Nieman, *Supt.* Long Branch, N. J.
N. J. So. Div.: R. Blodgett, *Supt* .. Manchester, N. J.
Wm. Montgomery, *M. M.* .... Manchester, N. J.
Chas. N. Sawyer, *M. C. B.* .... Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *Supt* .... Mauch Chunk, Pa.
L. C. Brastow, *Supt. Mach* .... Ashley, Pa.
Central R. R. of S. C. (*See Wil. & Wel.*)
Central Iowa Ry. 4-8½ g. 354 m. 49 lo. 1,959 cars.
Gen. Supt .. Marshalltown, Ia.
John Player, *M. M.* .... Marshalltown, Ia.
T. L. Seevers, *M. C. B.* .... Marshalltown, Ia.
Central Pac. R. R. 4-8½ g. 3,780 m. 269 lo. 7,277 c.
A. N. Towne, *Gen. Man* .... San Francisco, Cal.
J. A. Fillmore, *Gen. Supt* .. San Francisco, Cal.
R. H. Pratt, *A. G. Supt* .... San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt.* Sacramento, Cal.
A. J. Stevens, *Gen. M. M.* .... Sacramento, Cal.
W. McKenzie, *Asst. G. M. M.* .Sacramento, Cal.
Benj. Welch, *Gen. M. C. B.* .... Sacramento, Cal.
G. J. Turner, *Asst. G. M. C. B.* Sacramento, Cal.
Western: Visalia & Tulare Divs. and Northern Ry.
A. D. Wilder, *Supt* .... W. Oakland, Cal.
G. D. Welch, *M. M.* (W. Div.) W. Oakland, Cal.
W. B. Ludlow, *M. C. B.* (W. Div.) do.
S. Johnson, *M. M.* (T. Div.) .... Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.) S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
J. B. Wright, *Supt* .... Sacramento, Cal.
M. W. Cooley, *M. M.* (*S. Div.*) Sacramento, Cal.
Truckee Div.: J. H. Whited, *Supt.* Wadsworth, Nev.
Geo. Gregg, *M. M.* .... Wadsworth, Nev.
Wm. McPherson, *F. Car Sh.* . Wadsworth, Nev.
Humb't Div.: G. W. Coddington, *Supt.* Carlin, Nev.
W. F. Smith, *M. M.* .... Carlin, Nev.
J. C. Doughty, *For. Car Sh* .... Carlin, Nev.
Salt Lake Div.: A. G. Fell, *Supt* .... Ogden, Utah.
James Lamb, *M. M.* .... Terrace, Utah.
A. Sherburne, *For. Car Sh* .... Ogden, Utah.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt* .... Los Angeles, Cal.
James Velsir, *M. M.* .... Los Angeles, Cal.
T. T. Gilleland, *For. Car Sh.* Los Angeles, Cal.
Arizona Divs. (So. Pac.):
A. A. Bean, *Asst. Supt* .... Tucson, Ariz.
W. F. Smith, *M. M.* .... Tucson, Ariz.
Rio Grande and El Paso Divs. (So. Pac.):
J. Campbell, *Ass't Supt* .... El Paso, Texas.
H. C. Standish, *For. Sh* .... El Paso, Texas.
Colorado Div.: C. B. Seymour, *Supt.* Needles, Cal.
Central Vermont R. R. 4-8½ g. 548 m. 132 lo. 2,522 c.
J. W. Hobart, *Gen. Supt* .... St. Albans, Vt.
J. M. Foss, *Asst. Gen. Supt. & M. M.* St. Albans, Vt
No. Div.: I. B. Futvoye, *Supt* .... St. Johns, P. Q.
Rut. Div.: J. Burdett, *Supt* .... Rutland, Vt.
N. L. Davis, *M. M. & C. B.* .... Rutland, Vt.
Brat. Div.: E. F. Brooks, *Supt* .. Brattleboro, Vt.
New London & No'n R. R. 143 m. 22 lo. 303 c.
C. F. Spaulding, *G. Supt. & P. A.* New London, Ct.
I. W. Dow, *M. M.* .... New London, Ct.
S. O. Banks, *M. C. B.* .... New London, Ct.
Charleston & Savannah Ry. 5 g. 115 m. 17 lo. 98 c.
H. S. Haines, *Gen. Man* .... Savannah, Ga.
C. S. Gadsden, *Gen. Supt* .... Charleston, S. C.
H. A. Ulmo, *M. M.* .... Savannah, Ga.
Charlotte, Columbia & Augusta R. R. (*See Rich. & D.*)
Chateaugay R. R. 3 g. 34 m. 6 lo. 125 cars.
A. L. Inman, *Gen. Man* .... Plattsburg, N. Y.
J. M. Davis, *Supt. & M. M.* .... Plattsburg, N. Y.
Chattaroi Ry. 4-8½ g. 43 miles 11 loco. 483 cars
C. H. Rockwell, *Gen. Man. & P. A.* Ashland, Ky.
J. R. Martin, *M. M.* .... Ashland, Ky.
Joseph P. Burleigh, *M. C. B.* .... Ashland, Ky.
Cheraw & Chester R. R. 3 g. 30 m. 3 lo. 38 cars.
W. H. Harding, *Pres. & Supt* .... Chester, S. C.
A. M. Manning, *M. M.* .... Chester, S. C.
Cheraw & Darlington R. R. (*See Wil. & Wel.*)
Cheraw & Salisbury R. R. (*See Wil. & Wel.*)
John Postel, *Manager* .... Cedartown, Ga.
C. E. Scruton, *M. M. & C. B.* .... Cedartown, Ga.
Chesapeake, Ohio & So.-W'n.
4-9 g. 398 m. 47 lo. 1,339 c.
D. W. C. Brown, *G. S. & Pur. Agt.* Louisville, Ky.
H. E. Huntington, *Pur. Agt* .... Louisville, Ky.
F. H. Britton, *Mast. Trans* .... Paducah, Ky.
S. M. P. & M. Elizabethtown, Ky.
Geo. Dickey, *M. M.* .... Elizabethtown, Ky.
Chas. Daniels, *M. M.* .... Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 133 l. 3,543 c.
C. W. Smith, *Gen. Man* .... Richmond, Va.
D. A. Sweet, *Asst. to Gen. Man.* Richmond, Va.
A. H. Wood, *Asst. Gen. Supt.*, Huntington, W. Va.
A. S. Emmons, *Pur. Agt* .... Richmond, Va.
T. L. Chapman, *Supt. M. P.* .... Richmond, Va.
Eastern Div.: *Supt.* .Richmond, Va.
J. N. King, *M. C. B.* .... Richmond, Va.
West'n Div.: W. P. Harris, *Supt.* .. Hinton, W. Va.
W. H. Thomas, *M. M.* .. Huntington, W. Va.
T. L. Chapman, *Asst. Supt. M. P.*, and
H. C. Bassinger, *M. C. B.* Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt.* Lexington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 30 lo. 499 cars.
R. Stewart, *Gen. Man* .... Keene, N. H.
H. H. Stone, *Pur. Agt* .... Keene, N. H.
F. A. Perry, *M. M.* .... Keene, N. H.
A. E. Howard, *G. For. Car Sh* .. Keene, N. H.
Chester & Lenoir Ry. 3 g. 50 m. 3 lo. 23 cars.
James Mason, *Supt* .... Yorkville, S. C.
T. P. Beard, *M. M.* .... Yorkville, S. C.
Chicago, B. & Kan. City Ry. 4-8½ g. 181 m. 9 lo. 130 c.
Robt. Law, *Gen. Supt* .... Keokuk, Ia.
W. H. Bartlett, *Act. M. M.* .... Burlington, Ia.
Chicago, Burlington & Quincy R. R.
4-8½ g. 2,924 m. 521 lo. 18,955 cars.
T. J. Potter, *Gen. Man* .... Chicago, Ill.
(1) C., B. & Q., East of Mo. Riv. 1,938 miles.
H. B. Stone, *Asst. Gen. Man* .... Chicago, Ill.
Wm. Irving, *Pur. Agt* .... Chicago, Ill.
G. W. Rhodes, *Supt. M. P.* .... Aurora, Ill.
Wm. Forsyth, *Mech. Eng* .... Aurora, Ill.
Ill. Divs.: J. D. Besler, *Supt* .... Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt* .... Aurora, Ill.
L. E. Johnson, *M. M.* .... Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt.* Galesburg, Ill.
Robert Colville, *M. M.* .... Galesburg, Ill.
St. L. Div.: S. E. Crance, *Supt* .... St. Louis, Mo.
A. Forsyth, *M. M.* .... Beardstown, Ill.
Ia. & Mo. Divs.: *Supt* .. Burlington, Ia.
East. Div.: O. E. Stewart, *Supt* .. Burlington, Ia.
Joel West, *M. M.* .... Burlington, Ia.
Mid. Div.: J. B. Maxon, *Supt* .... Ottumwa, Ia.
West'n Div.: W. B. Ryder, *Supt* .... Creston, Ia.
C. W. Eckerson, *M. M.* .... Creston, Ia.
(2) C., B. & Q., West of Mo. Riv. 935 miles.
G. W. Holdrege, *Gen. Supt* .... Omaha, Neb.
Jas. M. Barr, *Pur. Agt* .... Omaha, Neb.
D. Hawksworth, *Gen. M. M.* .. Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
D. E. Thompson, *Supt* .... Lincoln, Neb.
E. Bignal, *M. M.* .... Lincoln, Neb.
R. V. Div.: A. Campbell, *Supt* .... Hastings, Neb.
A. & N. Div.: J. McConniff, *Supt* .. Lincoln, Neb.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 4,383 m. 425 lo. 13,659 cars.
S. S. Merrill, *Gen. Man* .... Milwaukee, Wis.
J. T. Clark, *Gen. Supt* .... Milwaukee, Wis.
J. T. Crocker, *Pur. Agt* .... Milwaukee, Wis.
J. M. Lowry, *Gen. M. M.* .... Milwaukee, Wis.
E. Fairbairn, *M. M.* .... Milwaukee, Wis.
John Baillie, *Supt. Car Dept* .. Milwaukee, Wis.
(1) H. C. Atkins, *Asst. Gen. Supt.* .Milwaukee, Wis.
Chi. Div.: Geo. O. Clinton, *Supt* .... Chicago, Ill.
La Crosse Div.: W. G. Collins, *Supt.* Milwaukee, Wis.
C. Bluffs Div.: A. J. Earling, *Supt* .... Marion, Ia.
P. du C. & M. Pt. Divs.:
R. B. Campbell, *Supt* .... Milwaukee, Wis.
(2) C. H. Prior, *Asst. Gen. Supt* .. Minneapolis, Minn.
H. & D. Div.: M. W. Kellie, *Supt* do.
J. O. Pattie, *M. M.* .... Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt.* do.
So. Minn. & River Divs.:
C. W. Case, *Supt* .... Dubuque, Ia.
Ia. & Da. Div.: G. W. Sanborn, *Supt.* Mason City, Ia.
S. Cy. & Da. Div.: J. Jackson, *Supt.* Sioux City, Ia.
F. H. Moulton, *M. M.* .... Yankton, Dak.
Dubuque Div.: C. W. Case, *Supt* .... Dubuque, Ia.
S. Charnley, *M. M.* .... Dubuque, Ia.
(3) D. A. Olin, *Asst. Gen. Supt* .... Racine, Wis
So.-Wn. Divs.: D. L. Bush, *Supt* .... Racine, Wis.
John Taylor, *M. M.* .... Racine, Wis.
E. A. Eddy, *M. C. B.* .... Racine, Wis.
Northern Div.: L. B. Rock, *Supt* .. Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B.* .. Milwaukee, Wis.
Chicago, Pekin & So.-Wn. R. R. 4-8½ g. 88 m. 8 lo. 455 c.
A. H. Crocker, *Rec* .... Joliet, Ill.
J. N. Chilson, *M. C. B.* .... Streator, Ill.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 300 lo. 7,760 cars.
R. R. Cable, *V. P. & Gen. Man* .... Chicago, Ill.
A. Kimball, *Gen. Supt* .... Chicago, Ill.
H. F. Royce, *Asst. G. Supt* .... Davenport, Ia.
F. A. Marsh, *Pur. Agt* .... Chicago, Ill.
T. B. Twombly, *Gen. M. M.* .... Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B.* .... Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt* .... Chicago, Ill.
R. Biester, *M. M.* .... Chicago, Ill.
Sam'l Pullman, *M. C. B.* .... Chicago, Ill.
Ia. Div.: Jno. Given, *Supt* .... Des Moines, Ia.
J. G. Crockett, *M. M.* .... Stuart, Ia.
Jas. E. Morrill, *M. M.* .... Davenport, Ia.
Chas. M. Leonard, *M. C. B.* .... Davenport, Ia.
So.-Wn. Div.: G. F. Walker, *Supt* .... Trenton, Ia.
R. O. Carscadin, *M. M.* .... Trenton, Mo.
Chas. R. Best, *M. C. B.* .... Trenton, Ia.
K. & Des. M. Div.: Jno. Given, *Supt.* .DesMoines, Ia.
S. W. Wakefield, *M. M.* .... Keokuk, Ia.
Henry Kummer, *M. C. B.* .... Keokuk, Ia.
Chicago, St. Louis & New Orleans R. R.
4-8½ g. 571 m. 101 lo. 1,913 cars.
J. C. Clarke, *V. P. & G. Man.* .New Orleans, La.
L. T. Brien, *Asst. Gen. Man.* .New Orleans, La.
C. M. Sheafe, *Gen. Supt* .... New Orleans, La.
H. B. Febiger, *Pur. Agt* .... New Orleans, La.
W. H. Purdy, *Supt. Mach* .. McComb City, Miss.
Geo. W. Baxter, *M. C. B.* .. McComb City, Miss.
So. Div.: E. D. Anderson, *Acting Supt.* do.
W. P. McKinley, *M. M.* .... McComb City, Miss.
No. Div.: J. G. Mann, *Supt* .... Jackson, Tenn.
J. M. Keith, *M. M.* .... Jackson, Tenn.
J. F. White, *M. M.* .... Water Valley, Miss.
Chicago, St. Louis & Pittsburg.
Jas. McCrea, *Man* .... Columbus, O.
Wm. Mullins, *Pur. Agt* .... Pittsburg, Pa.
E. B. Wall, *Supt. M. P.* .... Columbus, O.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,146 m. 181 lo. 5,221 cars.
J. M. Whitman, *Gen. Supt* .... St. Paul, Minn.
W. H. S. Wright, *Pur. Agt* .... St. Paul, Minn.
Matt. Ellis, *M. M.* .... St. Paul, Minn.
H. L. Preston, *M. C. B.* .... Hudson, Wis.
Ea. & No. Div.: A. A. Hobart, *Supt.* St. Paul, Minn.
St. P. and S. C. Div.:
H. Spencer, *Supt* .... St. James, Minn.
H. C. Anderson, *Gen. For. Sh.* .... Sioux Cy, Ia.
Neb. Div.: Jas. McCabe, *Supt* .... Omaha, Neb.
Chicago, Texas & Mexican Central Ry.
4-8½ g. 52 m. 4 lo. 60 cars.
Gen. Supt .... Dallas, Tex.
Chas. Howard, *Pur. Agt* .... Chicago, Ill.
Chicago & Alton R. R. 4-8½ g. 840 m. 213 lo. 6,148 c.
C. H. Chappell, *Gen. Man* .... Chicago, Ill.
W. F. Merrill, *Gen. Supt* .... Chicago, Ill.
A. V. Hartwell, *Pur. Agt* .... Chicago, Ill.
Wm. Wilson, *Supt. of Mach* .. Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept.* do.
Chi. Div.: A. M. Richards, *Supt* .. Bloomington, Ill.
St. Louis Div.: S. D. Reeves, *Supt* .. Roodhouse, Ill.
Wm. McPhail, *M. M.* .... Slater, Mo.
Chicago & Atlantic.
J. Condit Smith, *Gen. Man* .... Chicago, Ill.
J. C. Williams, *Gen. Supt* .... Chicago, Ill.
East. Div.: J. H. Tinney, *Supt.* Huntington, Ind.
West. Div.: J. H. Parsons, *Supt* .. Chicago, Ill.
R. C. Ackley, *M. M.* .... Huntington, Ind.
J. L. Adams, *M. C. B.* .... Huntington, Ind.
Chi. & East'n Ill. 4-8½ g. 248 m. 56 lo. 3,500 cars.
O. S. Lyford, *Gen. Supt* .... Chicago, Ill.
D. R. Patterson, *Pur. Agt* .... Chicago, Ill.
P. W. Drew, *M. Trans* .... Chicago, Ill.
Allen Cooke, *M. M.* .... Danville, Ill.
Chicago & Grand Trunk Ry. (*See Grand Trunk.*)
Chicago & Iowa R. R. 4-8½ g. 104 m. 16 lo. 237 cars.
T. J. Potter, *Gen. Man* .... Chicago, Ill.
W. H. Holcomb, *Gen. Supt* .... Rochelle, Ill.
H. S. Bryan, *M. M.* .... Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,476 m. 558 lo. 18,685 cars.
Marvin Hughitt, *2d V. Prs. & G. M.* Chicago, Ill.
J. D. Layng, *Gen. Supt* .... Chicago, Ill.
R. W. Hamer, *Pur. Agt* .... Chicago, Ill.
Geo. W. Tilton, *Supt. M. P. & M.*; and
J. M. Boon, *A. Supt. M. P. & M.* .. Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Chas. D. Gorham, *Supt* .... Chicago, Ill.
Gal. Div.: Chas. Murray, *Supt* .... Chicago, Ill.
Pen'r Div.: W. B. Linsley, *Supt* .... Escanaba, Mich.
Geo. H. White, *M. M.* .... Escanaba, Mich.
Mad. Div.: C. A. Swineford, *Supt.* .Baraboo, Wis.
Win. & St. P. Div.: S. Sanborn, *Supt.* Winona, Minn
W. A. Scott, *M. M.* .... Winona, Minn.
Dak. Cen. Ry.: W. F. Fitch, *Supt* .... Huron, Dak.
Ia. Div.: M. Hopkins, *Supt* .... Clinton, Ia.
Geo. W. Lowe, *M. M. & M. C. B.* Clinton, Ia.
No. Ia. Div.: H. G. Burt, *Supt* .... Eagle Grove, Ia.
Chicago & West Michigan:
4-8½ g. 409 m. 43 lo. 1,345 cars.
Geo. C. Kimball, *V. P. & G. Man.* Muskegon, Mich.
Gen. Supt .... Muskegon, Mich.
Edw. Hill, *Pur. Agt* .... Muskegon, Mich.
W. F. N. Davis, *M. M.* .... Muskegon, Mich.
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 25 m. 1 lo. 27 cars.
D. P. Hyatt, *Gen Man* .... Dayton, O.
Geo. F. Robinson, *Supt* .... Washington, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 2 lo. 39 c.
M. Simmons, *Supt* .... Cincinnati, O.
J. C. Homer, *M. M.* .... Cincinnati, O.
Cincinnati, Green Riv. & Nashville R. R. 3 g.
A. C. Sim, *Supt* .... King's Mountain, Ky.
G. Brashears, *Pur. Agt* .... Cincinnati, O.
Cincinnati, Hamilton & Dayton R. R.
C. J. Hepburn, *Gen. Supt* .... Cincinnati, O.
John Black, *Gen. M. M.* .... Lima, O.
W. H. H. Allison, *M. C. B.* .... Cincinnati, O.
C. R. & C. Div.: W. S. Brewer, *M. M.* Richm'd, Ind.
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 370 m. 71 lo. 3,279 cars.
J. W. Sherwood, *Supt* .... Indianapolis, Ind.
Geo. Tozzer, *Pur. Agt* .... Cincinnati, O.
J. S. Patterson, *M. of Mach. & M. C. B.* Cincinn., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 841 m. 123 lo. 2,687 cars.
John Scott, *V. Pres. & Gen. Man.* Cincinnati, O.
Richard Carroll, *Gen. Supt* .... Cincinnati, O.
R. W. Healey, *Gen. Pur. Agt* .... Cincinnati, O.
James Meehan, *Gen. M. M.* .... Cincinnati, O.
Cin. So. Div.:
I. W. Fowle, *M. M.* .... Cincinnati, O.
John Richardson, *M. C. B.* .... Cincinnati, O.
A. Thomson, *M. M.* .... Chattanooga, Tenn.
Ala. Gr. S'n Div.: C. B. Wallace, *Gen. Supt.*, and
George Manuell, *M. M.* .... Chattanooga, Tenn
Fred Morgan, *M. C. B.* .. Chattanooga, Tenn
V. & M. Div.: E. F. Raworth, *G. S.* Vicksburg, Miss
James B. Browne, *M. M.* .... Vicksburg, Miss.
V. S. & P. Div.: F. Y. Dabney, *Supt.* Monroe, La.
W. Bell Smith, *M. M. & C. B.* .... Monroe, La.
Cincinnati Northern Ry. 3 g. 30 m. 4 lo. 60 c.
G. L. Barringer, *Gen. Man* .... Cincinnati, O.
T. J. Hamer, *M. M. & C. B.* .... Cincinnati O.
Cincinnati, Selma & Mobile R. R. 5 g. 71 m. 6 lo. 135 c.
D. McLaren, *Supt* .... Selma, Ala.
H. L. Wright, *Pur. Agt* .... Selma, Ala.
J. M. Levis, *M. M.* .... Marion, Ala.
Cin., Wash. & Balt. 4-8½ g. 312 m. 65 lo. 1,422 cars
Jas. H. Stewart, *Gen. Man* .... Cincinnati, O.
Edw. Evans, *M. M.* .... Chillicothe, O.
T. G. Duncan, *Supt. C. D.* .... Zaleski, O.
Cin., Wabash & Mich. Ry. 4-8½ g. 165 m. 13 lo. 290 c.
Norman Beckley, *Gen. Man. & P. A.* Elkhart, Ind.
O. W. Lamport, *Supt* .... Wabash, Ind.
S. B. Tinker, *M. M. & M. C. B.* .... Wabash, Ind.
Cincinnati & Eastern Ry. 3 g. 76 m. 4 lo. 66 cars.
S. Woodward, *Gen. Man* .... Cincinnati, O.
P. W. Naughton, *M. M.* .... Cincinnati, O.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 3 lo. 28 cars.
A. H. Kunst, *Pres. and Gen. Man.* Weston, W. Va.
Sam. A. Steel, *M. M.* .... Weston, W. Va.
F. Dillie, *M. C. B.* .... Nottingham, O.
Cleveland, Columbus, Cincinnati & Indiana and Indianapolis & St. Louis Rys. and Dayton & Union R. R. 4-8½ g. 780 m. 246 lo. 7,082 cars.
E. B. Thomas, *Gen. Man* .... Cleveland, O.
J. L. Yale, *Pur. Agt* .... Cleveland, O.
W. F. Turreff, *Gen. M. M.* .... Cleveland, O.
W. W. Wallace, *Div. M. M.* .... Delaware, O.
Col. & Cin. Div.: Robt. Blee, *Supt* .. Cleveland, O.
W. L. Gilmore, *M. M.* .... Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept.* do.
Ind'p'lis Div.: John O. Ewan, *Supt.* Ind'polis, Ind.
J. K. Lape, *M. M.* .... Brightwood, Ind.
N. Mark, *G. For. Car Dept* .. Brightwood, Ind.
Ind. & St L Ry.: Tho. Burrows, *Supt.* St. Louis, Mo.
T. W. Ranson, *M. M. & C. B.* .. Mattoon, Ill.
Day. & Un. Rd.: J. H. Barrett, *Supt.* Cincinnati, O
H. S. Gordon, *M. M.* .... Dayton, O
Cleveland, Mt. Vernon & Delaware R. R.
4-9 g. 144 m. 22 lo. 751 c.
N. Monsarrat, *Gen. Supt* .... Akron, O.
G. M. Taylor, *M. M. & C. B.* .... Mt. Vernon, O.
Cleve., Youngstown & Pitts. R. R. 3 g. 30 m. 3 lo. 112 c.
D. T. Lumley, *Gen. Supt* .... Alliance, O.
C. H. Dorman, *M. M. & M. C. B.* .... Alliance, O.
Cleveland, Lorain & Wheeling Ry.
4-8½ g. 158 m. 23 lo. 1,522 cars.
Oscar Townsend, *Gen. Man* .... Cleveland, O.
Wm. Thornburg, *Supt* .... Lorain, O.
Cleve. & Marietta R. R. 4-8½ g. 99 m. 9 lo. 157 cars.
S. C. Baldwin, *Gen. Man* .... Marietta, O.
M. D. Woodford, *Gen. Supt* .... Marietta, O.
R. B. Hoover, *Pur. Agt* .... Marietta, O.
O. P. Dunbar, *Gen. M. M.* .... Norwalk, O.
A. Galloway, *M. M.* .... Cambridge, O.
Cleveland & Pittsburg R. R. (*See Penna. Co.*)
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 207 cars.
Jas. R. Barber, *Gen. Supt* .... Cobourg, Ont.
Jas. Clark, *M. M.* .... Cobourg, Ont.
John Tinney, *M. C. B.* .... Cobourg, Ont.
Columbia & Greenville R. R. (*See Rich. & Dan.*)
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 319 m. 90 lo. 7,257 cars.
M. M. Greene, *Gen. Man* .... Columbus, O.
G. R. Carr, *Gen. Supt* .... Columbus, O.
W. M. Greene, *Pur. Agt* .... Columbus, O.
Ira G. Hutchins, *M. M.* .... Columbus, O.
J. M. Rockafield, *M. C. B.* .... Columbus, O.
Tol. Div.: M. T. Seymour, *Supt* .... Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt.* Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt* .... Logan, O.
Columbus & Maysville Ry. (*See Cin. & East.*)
Columbus & Rome R. R. 3 g. 33 m. 2 lo. 25 cars.
M. E. Gray, *Supt* .... Columbus, Ga.
Columbus & Western Ry. 5 g. 89 m. 2 lo. 19 cars
E. A. Llewellen, *Gen. Man* .... Columbus, Ga.
R. A. Bridges, *M. M.* .... Opelika, Ala.
Concord R. R. 4-8½ g. 141 m. 37 lo. 1,010 cars
H. E. Chamberlain, *Supt. & P. Agt.* Concord, N. H.
J. T. Gordon, *M. M. & C. B.* .... Concord, N. H.

Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 33 lo. 456 c.
J. Mulligan, *Supt. & Pur. Agt.* ... Springfield, Mass.
W. H. Stearns, *M. M.* ... Springfield, Mass.
Robert Hitchcock, *M. C. B.* ... Springfield, Mass.
Connotton Valley R. R. 3 g. 160 m. 20 lo. 896 cars.
Samuel Briggs, *Gen. Man.* ... Canton, O.
B. C. Bosworth, *M. M.* ... Canton, O.
Cornwall R. R. 4-8½ g. 9 m. 5 lo. 166 cars.
Frank Donahue, *G. Supt. & M. M.* ... Lebanon, Pa.
Levi Bloneh, *M. C. B.* ... Lebanon, Pa.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 535 cars.
James Ross, *Gen. Supt.* ... Toronto, Ont.
John Macnab, *Pur. Agt.* ... Toronto, Can.
H. G. Taylor, *Mech. Supt.* ... Toronto, Can.
Crown Point Iron Co. R. R. 3 g. 13 m.
A. L. Inman, *Gen. Man.* ... Plattsburg, N. Y.
J. M. Davies, *Supt. & M. M.* ... Crown Point, N. Y.
J. C. Sherman, *M. C. B.* ... Crown Point, N. Y.
Cumberland Valley R. R. 4-9 g. 125 m. 21 lo. 430 cars.
J. F. Boyd, *Supt.* ... Chambersburg, Pa.
A. S. Hull, *M. M.* ... Chambersburg, Pa.
C. Wieke, *M. C. B.* ... Chambersburg, Pa.
Cumberland & Penn. R. R. 4-8½ g. 55 m. 28 lo. 625 c.
P. L. Burwell, *Gen. Supt. & P. A.* Cumberland, Md.
N. W. Howson, *Mast. of Mach.* Mt. Savage, Md.
Nathan Binix, *M. C. B.* ... Mt. Savage, Md.

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Danbury & Norwalk R. R. 4-8½ g. 33 m. 6 lo. 100 c.
L. W. Sandiforth, *G. Supt. & P. A.* S. Norwalk, Ct.
N. M. George, *M. M. & C. B.* ... Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. W. Goodrich, *Ch. Eng.* ... Leakesville, N. C.
Danville, Olney & O. R. R. R. 4-8½ g. 110 m. 4 lo. 83 c.
Chas. Howard, *Rec. & Man.* ... Olney, Ill.
J. M. Graham, *Supt.* ... Kansas, Ill.
Louis Parisoe, *M. M. & C. B.* ... Kansas, Ill.
Dayton & Union R. R. (*See Ohio Ry.*)
Del. Lackawanna & W. and N. Y., Lack. & W. R. Rs.
4-8½ g. 670 m. 348 lo. 26,187 cars.
Wm. F. Halstead, *Gen. Supt.* ... Scranton, Pa.
G. W. B. Cushing, *Pur. Agt.* ... New York, N. Y.
Walter Dawson, *Mast. of Mach.* ... Scranton, Pa.
Robt. McKenna, *M. C. B.* ... Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M.* ... Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt.* ... Utica, N. Y.
Thos. Thatcher, *M. M.* ... Utica, N. Y.
Morris & Essex Div.; Sussex; P. & D. and C. R. Rs.
A. Reasoner, *Supt.* ... Hoboken, N. J.
W. H. Lewis, *M. M.* ... Kingsland, N. J.
J. W. Baker, *Mast. Car Rep.* ... Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, *Supt.* ... Oswego, N. Y.
Jas. Buchanan, *M. M.* ... Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt.* ... Syracuse, N. Y.
Jas. Buchanan, *M. M.* ... Syracuse, N. Y.
Delaware, Maryland & Virginia R. R.
4-8½ g. 101 m. 7 lo. 145 cars.
Tho. Groom, *Supt.* ... Lewes, Del.
Geo. Messick, *M. M.* ... Lewes, Del.
W. H. Virden, *M. C. B.* ... Lewes, Del.
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 596 m. 151 lo. 9,248 cars.
C. F. Young, *Gen. Man.* ... Honesdale, Pa.
C. F. Young, *Pur. Agt.* ... Albany, N. Y.
R. C. Blackall, *Supt. of Mach.* ... Albany, N. Y.
Susq. Div.: C. D. Hammond, *Supt.* Albany, N. Y.
C. A. Jones, *M. M.* ... Oneonta, N. Y.
J. R. Skinner, *M. C. B.* ... Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt.* ... Troy, N. Y.
J. L. Corey, *M. M.* ... Green Island, N. Y.
Chr. Körner, *M. C. B.* ... Green Island, N. Y.
Pa. Div.: R. Manville, *Supt. & Pur. Agt.* and
S. H. Dotterer, *M. M.* ... Carbondale, Pa.
T. Orchard, *M. C. B.* ... Carbondale, Pa.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c.
C. W. Fisher, *Gen. Man.* ... Denver, Col.
Chas. Wheeler, *Pur. Agt.* ... Denver, Col.
S. P. Weller, *M. M. & M. C. B.* ... Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,062 m. 170 lo. 4,617 c.
D. C. Dodge, *Gen. Man.* ... Denver, Col.
R. B. Cable, *Gen. Supt.* ... Denver, Col.
Henry Wood, *Supt. Utah Lines* S. L. City, Utah.
A. B. Garner, *Pur. Agt.* ... Denver, Col.
N. W. Sample, *M. M.* ... Denver, Col.
1st Div.: W. H. Bancroft, *Supt.* ... S. Pueblo, Col.
2d Div.: Cole Lydon, *Supt.* ... Alamosa, Col.
3d Div.: G. W. Cook, *Supt.* ... Leadville, Col.
4th Div.: R. M. Ridgway, *Supt.* ... Salida, Col.
5th Div.: J. A. Myers
Des Moines & Ft. Dodge. 4-8½ g. 143 m. 13 lo. 232 c.
C. N. Gilmore, *Supt.* ... Des Moines, Ia.
John McGrayel, *M. M.* ... Grand Junction, Ia.
E. A. Avery, *M. C. B.* ... Grand Junction, Ia.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 36 lo. 478 c.
G. R. Nash, *Gen. Man.* ... Detroit, Mich.
John S. Lorimer, *Storekeeper* ... Detroit, Mich.
W. J. Morgan, *Supt.* ... Detroit, Mich.
F. Parker, *Mech. Supt.* ... Detroit, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c.
John B. Mulliken, *Gen. Man.* ... Detroit, Mich.
Allan Bourn, *Pur. Agt.* ... Detroit, Mich.
Thos. M. Fish, *Gen. Supt.* ... Ionia, Mich.
G. C. Watrous, *M. M. & C. B.* ... Ionia, Mich.
Det., Mack. & Marq. R. R. 4-8½ g. 151 m. 16 lo. 1112 c.
D. McCool, *Gen. Supt. & P. A.* Marquette, Mich.
John Wilson, *Mech. Supt.* ... Marquette, Mich.
Dorchester & Delaware R. R. 4-8½ g. 33 m.
Thos. E. Wright, *Supt.* ... Cambridge, Md.
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt.* ... Waverly, Ia.
W. S. Couch, *Pur. Agt.* ... Dubuque, Ia.
Duck River Valley R. R. 3 g. 34 m.
Geo. Childress, *Supt.* ... Columbia, Tenn.
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, *Gen. Supt.* ... Dunkirk, N. Y.
R. C. Moore, *Pur. Agt.* ... New York, N. Y.
J. C. Haggett, *M. M. & C. B.* ... Dunkirk, N. Y.

E

East Broad Top R. R. 3 g. 30 m. 6 lo. 191 cars.
A. W. Sims, *Supt.* ... Orbisonia, Pa.
A. B. Greenwood, *M. M.* ... Orbisonia, Pa.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,185 m. 133 lo. 1,597 cars.
Henry Fink, *V. P. & Gen. Man.* Knoxville, Tenn.
J. F. O'Brien, *Gen. Supt.* ... Knoxville, Tenn.
W. A. Harrison, *Pur. Agt.* ... Knoxville, Tenn.
East Tenn. Div. and No. Car. and Ohio Branches:
F. K. Huger, *Supt.* ... Knoxville, Tenn.
B. J. Sitton, *M. M.* ... Knoxville, Tenn.
Jos. Armbruster, *M. C. B.* ... Knoxville, Tenn.
Alabama Div.: J. M. Bridges, *Supt.* ... Selma, Ala.
Simon Gay, *M. M.* ... Selma, Ala.
W. W. Pierce, *M. C. B.* ... Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt.* ... Memphis, Tenn.
H. N. Burford, *M. M.* ... Memphis, Tenn.
Atlanta & Brunswick Divs.:
Atl. Div.: J. W. Fry, *Supt.* ... Atlanta, Ga.
Br. Div.: J. E. Mallory, *Supt.* ... Macon, Ga.
M. J. Rogers, *M. M. & M. C. B.* ... Atlanta, Ga.
M. J. Rogers, *M. M.* ... Atlanta, Ga.
East & West R. R. of Alabama.
John Postell, *Manager* ... Cross Plain, Ala.
Eastern R. R. 4-8½ g. 283 m. 90 lo. 2,268 cars.
Payson Tucker, *Gen. Man.* ... Boston, Mass.
D. W. Sanborn, *Mast. of Trans.* Boston, Mass.
G. F. Hurd, *Pur. Agt.* ... Boston, Mass.
Amos Pillsbury, *S. M. P. & M.* E. Boston, Mass.
J. D. Billings, *G. For. Car Dept.* ... Salem, Mass.
Con'y Div.: J. W. Sanborn, *Supt.* Wolfboro J., N. H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 123 c.
H. W. Bates, *Man. & Pur. Agt.* ... Riverton, Ky.
D. S. Weaver, *M. M.* ... Riverton, Ky.
Eastern Shore R. R. 4-8½ g. 38 m. 2 lo.
W. Thompson, *Supt.* ... Princess Anne, Md.
F. Strattner, *M. M.* ... Princess Anne, Md.
Elberton Air-Line R. R. (*See Rich. & Dan. N. G. Brs.*)
Erie & Pittsburg R. R. (*See Penna. Co.*)
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 124 cars.
B. Gilman, *Gen. Supt. & Pur. Agt.* Eureka, Nev.
E. C. Mills, *M. M.* ... Palisade, Nev.
A. S. Longley, *M. C. B.* ... Palisade, Nev.
Evansville, Paducah & Cairo Line. 200 miles.
G. J. Grammer, *Supt.* ... Evansville, Ind.
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c.
H. L. Shepard, *Supt.* ... Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 145 m. 26 lo. 900 c.
Gen. Supt. ... Evansville, Ind.
John Torrance, *Gen. For.* ... Evansville, Ind.

F

Fitchburg R. R. 4-8½ g. 189 m. 100 lo. 3,315 cars.
John Adams, *Gen. Supt.* ... Boston, Mass.
E. K. Turner, *Asst. Supt.* ... Fitchburg, Mass.
F. S. Pratt, *Pur. Agt.* ... Boston, Mass.
A. Coolidge, *Supt. M. P.* ... Boston, Mass.
W. A. Foster, *Asst. Supt. M. P.* ... Fitchburg, Mass.
J. W. Marden, *M. C. B.* ... Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 345 m. 68 lo. 1,854 cars.
H. C. Potter, *Gen. Man.* ... E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man.* E. Saginaw, Mich.
G. G. Cook, *Pur. Agt.* ... E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt.* ... E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.) E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.) E. Saginaw, Mich.
T. J. Hatswell, *M. M.* ... E. Saginaw, Mich.
R. McPherson, *M. C. B.* ... E. Saginaw, Mich.
Florida Central & Western R. R.
5 g. 234 m. 16 lo. 160 cars.
Wm. M. Davidson, *Gen. Man.* Jacksonville, Fla.
Jas. S. McElroy, *Supt.* ... Tallahassee, Fla.
Florida Southern Ry. 3 g. 91 m. 6 lo. 96 cars.
J. D. Hollister, *Gen. Supt.* ... Palatka, Fla.
Jas. D. Hollister, *Supt.* ... Palatka, Fla.
M. R. Miller, *M. M. & C. B.* ... Palatka, Fla.
Florida Transit R. R. 5 g. 224 m.
D. E. Maxwell, *Gen. Supt.* ... Fernandina, Fla.
John Hedges, *Pur. Agt.* ... Fernandina, Fla.
R. V. Dahoney, *M. M.* ... Fernandina, Fla.
G. Hernandez, *M. C. B.* ... Fernandina, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 18 c.
Lawton Caten, *Supt.* ... Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A.* Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. 4-8½ g.
G. R. Pearson, *Supt.* ... Fort Dodge, Ia.
Ft. Madison & No.-West'n Ry. 3 g. 41 m. 4 lo. 120 c.
S. B. Kenrick, *Supt. & Pur. Agt.* Ft. Madison, Ia.
I. L. Lamb, *M. M. & C. B.* ... Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 108 m. 9 lo. 249 c.
White Water R. R. 4-8½ g. 62 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt.* ... Ft. Wayne, Ind.
T. H. Haberkorn, *M. M.* ... Ft. Wayne, Ind.
Wm. Knight, *M. C. B.* ... Ft. Wayne, Ind.
Fulton County N. G. Ry. 3 g. 61 m. 3 lo. 106 cars.
A. C. Atherton, *Gen. Supt. & P. Agt.* Lewiston, Ill.

G

Galveston, Harrisburg & San Antonio Ry.
4-8½ g. 492 m. 47 lo. 1870 cars.
A. N. Towne, *Gen. Man.* ... Houston, Tex.
E. G. Thompson, *Supt.* ... Houston, Tex.
El Paso Div.: Jas. Campbell, *Supt.* El Paso, Tex.
J. L. Bonner, *M. M.* ... El Paso, Tex.
San Anto. Div.: W. G. Van Vleck, *Supt.*
San Antonio, Tex.
J. J. Ryan, *M. M.* ... San Antonio, Tex.
Houston Div.: H. Flanders, *Supt.* Harrisburg, Tex.
D. T. Davis, *M. M.* ... Harrisburg, Tex.
Louisiana Div.: W. Irwin, *Supt.* ... Houston, Tex.
D. C. Smith, *M. M.* ... Houston, Tex.
Galveston, Houston & Henderson R. R.
4-8½ g. 50 m. 17 lo. 212 cars.
W. H. Harding, *G. Man. & P. Agt.* Galveston, Tex.
Allen McCoy, *Supt.* ... Galveston, Tex.
J. G. Conlon, *M. M.* ... Galveston, Tex.
Geneva, Ithaca & Sayre R. R. (*See Lehigh Val.*)
Georgia R. R. 5 g. 307 m. 42 lo. 938 cars.
John W. Green, *Gen. Man.* ... Augusta, Ga.
John S. Cook, *M. M.* ... Augusta, Ga.
T. M. Preval, *M. C. B.* ... Augusta, Ga.
Georgia Pacific Ry. (Miss. Div.). 3 g. 43 m. 2 lo. 44 c.
G. J. Foreacre, *Supt.* ... Atlanta, Ga.
W. M. Sutton, *Pur. Agt.* ... Greenville, Miss.
Benj. Davis, *M. M.* ... Greenville, Miss.
J. B. Shelton, *M. C. B.* ... Greenville, Miss.
Grand Haven R. R. (*See Chic. & W. Mich.*)
Grand Junction R'y. (*See Midland of Can.*)
G'd Rap., Newaygo & L. S. R. R. (*See Chic. & W. M.*)
Grand Rapids & Indiana. 4-8½ g. 456 m. 52 lo. 1,566 c.
W. O. Hughart, *Gen. Man.* Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt.* ... Grand Rapids, Mich.
S. D. Bradley, *M. M.* ... Grand Rapids, Mich.
No'n Div.: J. M. Metheany, *Supt.* G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, *Supt.* Fort Wayne, Ind.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, *Supt. & P. A.* Gr. Tower, Ill.
Hugh Smith, *M. M. & C. B.* ... Grand Tower, Ill.
Grand Trunk Ry. 4-8½ g. 2,321 m. 434 lo. 9,403 c.
Joseph Hickson, *Gen. Man.* ... Montreal, Can.
Wm. Wainright, *Asst. Man.* ... Montreal, Can.
Gr. Tr. Divs.: W. J. Spicer, *Supt.* Montreal, Can.
Jno. Taylor, *Gen. Storekeeper* Montreal, Can.
Herbert Wallis, *Mech. Supt.* ... Montreal, Can.
Wm. McWood, *Supt. Car Dept.* Montreal, Can.
F. R. F. Brown, *Man. Lo. Wks.* Montreal, Can.
J. Haskoni, *Div. M. S.* ... Richmond, P. Q.
F. L. Wanklyn, *Div. M. S.* ... Brockville, Ont.
J. Davis Barnett, *Div. M. S.* ... Stratford, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 330 m. 56 lo. 1,191 c.
S. R. Callaway, *Gen. Man.* ... Chicago, Ill.
W. H. Pettibone, *Supt.* ... Battle Creek, Mich.
A. Judd, *Pur. Agt.* ... Fort Gratiot, Mich.
H. Roberts, *Mech. Supt.* ... Port Huron, Mich.
Great West'n Div.: 4-8½ g. 823 m. 216 lo. 5,039 c.
Chas. Stiff, *Supt.* ... Hamilton, Ont.
E. R. Baines, *Store Kpr.* ... London, Ont.
C. K. Domville, *Mech. Supt.* ... Hamilton, Ont.
C. F. Hanson, *Lo. For.* ... London, Ont.
J. D. McIlwain, *Supt. Car Dept.* London, Ont.
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 599 cars.
Timothy Case, *Gen. Man. & P. A.* Green Bay, Wis.
A. Fenwick, *M. M.* ... Ft. Howard, Wis.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 536 m. 43 lo. 1,400 c.
John Sealy, *Gen. Man.* ... Galveston, Texas.
F. P. Killeen, *Asst. Gen. Man.* Galveston, Texas.
Jno. W. Thorne, *Pur. Agt.* ... Galveston, Texas.
G. B. Nichols, *M. M.* ... Galveston, Texas.
W. H. Martin, *M. C. B.* ... Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 70 c.
M. D. Monserrate, *Pr. & Supt.* ... Cuero, Texas.
James Mooney, *M. M.* ... Cuero, Texas.

H

Halifax & Cape Breton Ry. 4-8½ g. 79 m. 9 lo. 268 c.
H. Abbott, *Manager* ... New Glasgow, N. S.
Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,860 c.
John B. Carson, *Gen. Man.* ... Hannibal, Mo.
W. R. Woodard, *Supt.* ... Hannibal, Mo.
T. L. Dunn, *Ch. Eng. & Pur. Agt.* Hannibal, Mo.
Jas. Long, *Supt. M. P. & Car Dep.* Hannibal, Mo.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 9 lo. 106 cars.
H. D. Scott, *Gen. Supt.* ... Hanover, Pa.
John J. Bingley, *M. M.* ... Hanover, Pa.
Jas. Hartnorn, *M. C. B.* ... Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 35 m. 3 lo. 34 c.
R. H. Middleton, *Supt.* ... Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 45 m. 9 lo. 196 c.
Samuel Babcock, *Pr. & Gen. Man.* Hartford, Ct.
Levi Woodhouse, *Asst. Supt.* ... Hartford, Ct.
S. E. Brewer, *M. M. & C. B.* ... Hartford, Conn.
Hartford & Conn. W'n R. R. 4-8½ g. 110 m. 16 lo. 495 c.
John F. Jones, *Supt.* ... Hartford, Ct.
J. C. Barton, *M. M.* ... Hartford, Ct.
Housatonic R. R. 4-8½ g. 126 m. 22 lo. 495 cars.
W. H. Yeomans, *Supt.* ... Bridgeport, Ct.
D. S. Draper, *Pur. Agt.* ... Bridgeport, Ct.
N. Slingland, *M. M.* ... Falls Village, Ct.
J. J. Ferris, *M. C. B.* ... Falls Village, Ct.
Houston Belt Ry. 4-8½ and 3 gauge. 50 miles.
S. L. Werden, *V. P. & Gen. Man.* Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 120 m. 10 lo. 478 c.
Paul Bremond, *Pr. & Pur. Agt.* ... Houston, Tex.
E. L. Bremond, *Gen. Man.* ... Houston, Tex.
B. O. Diffey, *M. M.* ... Houston, Tex.
C. F. Schelewa, *M. C. B.* ... Houston, Texas.
Houston & Tex. Cen. Ry. 4-8½ g. 750 m. 78 lo. 2,526 c.
J. Waldo, *V. Pr. & Gen. Man.* ... Houston, Tex.
A. H. Swanson, *Gen. Tr. Man.* ... Houston, Tex.
E. S. Larchar, *Pur. Agt.* ... New York, N. Y.
L. C. Noble, *Gen. M. M.* ... Houston, Tex.
James McGee, *M. C. B.* ... Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt.* Houston, Tex.
No. & Ml. Divs.: G. A. Quinlan, *Supt.* Dallas, Tex.
C. H. Burns, *Asst. M. M.* ... Corsicana, Tex.
No.-Wn. Div.: Donald Allen, *Supt.* ... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 85 m. 5 lo. 72 cars.
F. O. Wyatt, *Gen. Man.* ... Clarinda, Ia.
M. B. Snyder, *M. M.* ... Clarinda, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage, *Gen. Supt.* ... Huntingdon, Pa.
Samuel B. Knight, *Pur. Agt.* ... Philadelphia, Pa.
William Barkla, *M. M.* ... Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,554 m. 224 lo. 6,172 c.
Jas. C. Clark, *Gen. Man.* ... Chicago, Ill.
E. T. Jeffery, *Gen. Supt.* ... Chicago, Ill.
C. A. Beck, *Asst. Gen. Supt.* ... Chicago, Ill.
O. Ott, *Pur. Agt.* ... Chicago, Ill.
Henry Schlacks, *S. of Mach.* ... Chicago, Ill.
W. B. Snow, *M. M. Car Works* ... Chicago, Ill.
Chic. Div.: T. J. Hudson, *Supt.* ... Cairo, Ill.
Wm. Renshaw, *Act. M. M.* ... Chicago, Ill.
Mid. Div.: H. L. Frisbie, *Supt.* ... Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt.* Springfield, Ill.
W. B. McKenna, *M. M.* ... Clinton, Ill.
No'n Div.: J. C. Jacobs, *Supt.* ... Amboy, Ill.
J. B. Edams, *M. M.* ... Amboy, Ill.
So. Div.: David Oxley, *M. M.* ... Centralia, Ill.
Ia. Div.: M. Gilleas, *Supt.* ... Dubuque, Ia.
Thos. W. Place, *M. M.* ... Waterloo, Ia.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man.* ... Decatur, Ill.
O. E. Grady, *Train Mast.* ... Decatur, Ill.
Frank Young, *For. Shops* ... Paris, Ill.
Illinois & St. Louis R. R. 4-8½ g. 18 m. 5 lo. 402 c.
Tho. McKissock, *Gen. Man.* ... St. Louis, Mo.
C. H. Sharman, *Gen. Supt. & P. A.* St. Louis, Mo.
D. J. Timlin, *M. M.* ... Belleville, Ill.
Charles Rothe, *M. C. B.* ... E. St. Louis, Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 712 m. 64 lo. 3,050 cars.
C. E. Henderson, *Gen. Man.* Indianapolis, Ind.
J. H. Wilson, *Gen. Supt.* ... Indianapolis, Ind.
H. C. Norton, *Pur. Agt.* ... Indianapolis, Ind.
B. Warren, *Gen. M. M.* ... Indianapolis, Ind.
Peoria Div.: I. H. Wilson, *Supt.* Indianapolis, Ind.
E. Hiserodt, *M. M.* ... Urbana, Ill.
St. Louis Div.: I. H. Wilson, *Supt.* ... Indnpls, Ind.
John King, *M. M.* ... Indianapolis, Ind.
Ohio Div.: D. R. Ennis, *Asst. Supt.* Springfield, Ill.
Jos. S. Porter, *M. M.* ... Sandusky, O.
Indiana, Illinois & Iowa R. R. 63 miles.
F. M. Drake, *Gen. Man.* ... Kankakee, Ill.
J. P. Shonts, *Supt.* ... Kankakee, Ill.
Indiana & Illinois Southern Ry. 3 g. 89 m.
W. C. Lyon, *Gen. Man. & P. Agt.* Robinson, Ill.
J. S. Pickering, *M. M. & C. B.* ... Effingham, Ill.
Indianapolis & Vincennes R. R. (*See Penna. Co.*)
Intercolonial Ry. 4-8½ g. 846 m. 135 lo. 4,500 cars.
David Pottinger, *Chief Supt.* ... Moncton, N. B.
T. V. Cooke, *Gen. Storekeeper* ... Moncton, N. B.
H. A. Whitney, *Mech. Supt.* ... Moncton, N. B.
Ewd. D. Shaffer, *M. C. B.* ... Moncton, N. B.
Monc. Div.: J. E. Price, *Supt.* ... Cambellton, N. B.
Hal. & St. J. Div.: J. J. Wallace, *Supt.* Truro, N. B.
Levis Div.: A. McDonald, *Supt.* Rivière du Loup, Q.
International Ry. 4-8½ g. 69 m. 2 lo. 12 cars.
D. E. McFee, *Supt.* ... Sherbrooke, Que.
International & Gt. N'n R. R. (*See Mo. Pac. Ry.*)
Iron Mountain & Helena R. R. 4-8½ g. 27 m. 2 lo. 11 c.
Wm. Bailey, *Pres. & Gen. Man.* ... Helena, Ark.
D. Stillinger, *Supt.* ... Helena, Ark.
F. M. Green, *Pur. Agt.* ... Helena, Ark.
Wm. Summers, *M. C. B.* ... Helena, Ark.
Ithaca, Auburn & Western Ry. 4-8½ g. 38 m.
Fred T. Peet, *Supt.* ... Auburn, N. Y.
Ira Dunning, *M. M.* ... Auburn, N. Y.

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 68 c.
E. S. Greenleaf, *Supt.* ... Jacksonville, Ill.
Ira Petrie, *M. M.* ... Jacksonville, Ill.
Jacksonv., Pensacola & Mob. (*See Fla. Cent. & W.*)
Jamesville & Washington. 4-8½ g. 22 m. 3 lo. 24 c.
A. Fisher, *Manager* ... Dymond City, N. C.
J. E. Lordley, *M. M. & C. B.* ... Dymond City, N. C.
Jeffersonv'l, Madison & Indpls. R. R. (*See Pa. Co.*)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, *Manager* ... Jersey City, N. J.

K

Kansas Central R. R. (*See Union Pacific.*)
Kansas Cy, Lawrence & So. Kan. 4-8½ g. 396 m. 787 c.
C. C. Wheeler, *Gen. Man.* ... Topeka, Kan.
J. L. Barnes, *Supt.* ... Lawrence, Kan.
F. M. Smith, *Pur. Agt.* ... Topeka, Kan.
T. D. Volk, *M. M.* ... Ottawa, Kan.
Kansas City, Fort Scott & Gulf R. R. 4-8½ g.
Geo. H. Nettleton, *Gen. Man.* ... Kansas City, Mo.
L. W. Towne, *Gen. Supt.* ... Kansas City, Mo.
H. P. Jacques, *Pur. Agt.* ... Kansas City, Mo.
J. S. McCrum, *M. M.* ... Kansas City, Mo.
A. N. Montier, *M. C. B.* ... Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ g. 308 m. 38 lo. 1,148 cars.
J. F. Barnard, *Gen. Supt. & P. A.* St. Joseph, Mo.
Wm. Irving, *Pur. Agt.* ... Chicago, Ill.
F. A. Chase, *M. M.* ... St. Joseph, Mo.
Thos. Aylesbury, *G. For. Car Dep.* St. Joseph, Mo.
Kendall & Eldred R. R. (*See Olean, B. & W.*)
Kent Co.: Sm. & Del. Bay Rds. 4-8½ g. 50 m. 2 lo. 13 c.
Fred Gerker, *Gen. Man.* ... Chestertown, Md.
Kentucky Central R. R. 4-9 g. 150 m. 20 lo. 598 cars.
G. W. Bender, *Supt.* ... Covington, Ky.
A. H. Watts, *F. of Mach.* ... Covington, Ky.
J. L. Hackathorn, *M. C. B.* ... Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, *Supt. & P. A.* ... Mt. Sterling, Ky.
S. P. Hatfield, *M. M.* ... Mt. Sterling, Ky.
Kinzua R. R. (*See Olean, B. & W.*)
Kingston & Pembroke Ry. 4-8½ g. 65 m. 4 lo. 76 c.
B. W. Folger, *Supt.* ... Kingston, Ont.
C. Gildersleeve, *Pur. Agt.* ... Kingston, Ont.
Geo. Becker, *M. M.* ... Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 95 cars.
C. A. Coombs, *Supt.* ... Bath, Me.
Wm. A. Field, *M. M.* ... Bath, Me.
C. L. Turner, *M. C. B.* ... Bath, Me.
Knoxville & Augusta R. R. 4-6 g. 16 m. 2 lo. 34 cars.
J. M. Hood, *Supt.* ... Knoxville, Tenn.
M. R. Hood, *Pur. Agt.* ... Knoxville, Tenn.

L

Lackawanna & Pittsburg R. R. 3 g. 91 m.
R. M. Patterson, *Gen. Supt.* ... Friendship, N. Y.
Lake Erie & Western Ry. 4-8½ g. 388 m. 43 lo. 1,526 c.
D. S. Hill, *Gen. Supt.* ... La Fayette, Ind.
T. H. Perry, *Pur. Agt.* ... La Fayette, Ind.
H. L. Cooper, *Supt. of Equipment* ... Lima, O.
D. S. Hill, *Gen. Supt.* ... Sandusky, O.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,243 m. 546 lo. 17,115 cars.
John Newell, *Gen. Man.* ... Cleveland, O.
P. P. Wright, *Gen. Supt.* ... Cleveland, O.
A. C. Armstrong, *Pur. Agt.* ... Cleveland, O.
James Sedgley, *Gen. M. M.* ... Cleveland, O.
John Kirby, *Gen. M. C. B.* ... Cleveland, O.
Buffalo Div.: C. B. Couch, *Supt.* ... Cleveland, O.
J. S. Graham, *M. M.* ... Buffalo, N. Y.
A. C. Robson, *M. C. B.* ... Buffalo, N. Y.
Frank. Div.: G. H. McIntire, *Supt.* Stoneboro, Pa.
Erie Div.: C. B. Couch, *Supt.* ... Cleveland, O.
L. O. Gassett, *M. M.* ... Cleveland, O.
J. Withycombe, *M. C. B.* ... Cleveland, O.
Toledo Div.: Thos. Flesher, Jr., *Supt.* Cleveland, O.
J. M. Sanborn, *M. M.* ... Norwalk, O.
W. O. Smith, *M. C. B.* ... Norwalk, O.
Mich. Div.: J. E. Curtis, *Supt.* ... Toledo, O.
Det. Div.: T. J. Charlesworth, *Supt.* Detroit, Mich.
Lansing Div.: W. H. Caniff, *Supt.* ... Lansing, Mich.
Western Div.: A. G. Amsden, *Supt.* ... Chicago, Ill.
G. W. Stevens, *M. M.* (M. S. Divs.) Elkhart, Ind.
Frank O. Bray, *M. C. B.* ... Adrian, Mich.
Ft. Wayne Br: W. H. Caniff, *Supt.* Jackson, Mich.
Kalamazoo Div.:
M. E. Wattles, *Supt.* ... Kalamazoo, Mich.
Lebanon Springs R. R. 4-8½ g.
W. C. Alstyne, *Manager* ... Albany, N. Y.
J. K. Hotaling, *Pur. Agt.* ... Albany, N. Y.
Geo. Tefft, *M. M.* ... Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 545 m. 321 lo. 33,817 c.
H. S. Goodwin, *Gen. Supt.* ... Bethlehem, Pa.
W. C. Alderson, *Pur. Agt.* ... Philadelphia, Pa.
John S. Lentz, *M. C. B.* ... Packerton, Pa.
N. J. Div.: Jas. Donnelly, *Supt.* Perth Amboy, N. J.
John I. Kinsey, *M. M.* ... So. Easton, Pa.
Coal Rds.: J. I. Blakeslee, *Supt.* Mauch Chunk, Pa.
P. Hofecker, *M. M.* ... Weatherly, Pa.
John Campbell, *M. M.* ... Delano, Pa.
B. M. Div.: A. G. Brodhead, *S.* ... Mauch Chunk, Pa.
D. Clark, *M. M.* ... Hazleton, Pa.
Wy. Div.: A. Mitchell, *S. & M. M.* Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, *Supt.* ... Sayre, Pa.
J. N. Weaver, *M. M.* ... Sayre, Pa.
Lehigh & Hudson. 4-8½ g. 63 m. 8 lo. 350 cars.
Grinnel Burt, *Gen. Man.* ... Warwick, N. Y.
John Sayre, *Pur. Agt.* ... Warwick, N. Y.
S. Mills, *M. M.* ... Warwick, N. Y.
Ligonier Valley R. R. 4-9 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, *Gen. Manager* ... Pittsburg, Pa.
Geo. Senft, *Supt. & P. Agt.* ... Latrobe, Pa.
Litt'le Rock, Miss. River & Texas Ry.
4-8½ g. 160 m. 12 lo. 260 cars.
J. A. Woodson, *G. S. & P. A.* Little Rock, Ark.
F. Hufsmith, *M. M. & C. B.* Arkansas City, Ark.
Little Rock & Fort Smith. 4-8½ g. 168 m. 12 lo. 353 c.
T. Hartman, *Gen. Supt.* ... Little Rock, Ark.
James Eblin, *M. M.* ... Argenta, Ark.
James Malone, *M. C. B.* ... Argenta, Ark.
Long Island R. R. 4-8½ g. 325 m. 79 lo. 740 cars.
I. D. Barton, *Supt.* ... Long Island City, N. Y.
Benj. Norton, *Pur. Agt.* Long Island City, N. Y.
C. A. Thompson, *M. M. & C. B.* ... do.
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 1,032 c.
Webster Snyder, *Gen. Man.* ... Louisville, Ky.
W. H. Field, *Pur. Agt.* ... Louisville, Ky.
F. M. Mast, *M. M.* ... Evansville, Ind.
Louisville, New Albany & Chicago Ry.
4-8½ g. 470 miles 56 lo. 3,700 cars.
John McLeod, *Gen. Supt.* ... Louisville, Ky.
G. C. Breed, *Pur. Agt.* ... Louisville, Ky.
Josiah Beitls, *M. M. & C. B.* ... New Albany, Ind.
Nor. Div.: W. G. Sala, *Supt.* ... Chicago, Ill.
So. Div.: W. N. Marshall, *Supt.* New Albany, Ind.
Louisville & Nashville R. R.
5 g. 2,090 m. 367 lo. 11,353 cars.
Milton H. Smith, *Gen. Man.* ... Louisville, Ky.
P. P. Huston, *Pur. Agt.* ... Louisville, Ky.
D. W. C. Rowland, *Gen. Supt. Trans.* Louisville, Ky.
Reuben Wells, *Supt. Mach.* ... Louisville, Ky.
Louisv. Divs.; and Louisv., Cin. & Lex. Ry. (Cin. Div.)
J. G. Metcalf, *Supt. Trans.* ... Louisville, Ky.
P. Leeds, *M. M.* (Lo. Div.) ... Louisville, Ky.
J. W. Luttrell, *M. M.* (Cin. Div.) Louisville, Ky.
J. G. Clifford, *M. M.* (2d & C. Div.) Bowling Grn. Ky.
Henderson Div.: L. Hege, *Supt.* ... Henderson, Ky.
W. F. Pike, *M. M.* ... Henderson, Ky.
Nash. & D. Div.: J. Geddes, *Supt.* Nashville, Tenn.
W. H. Thomas, *M. M.* ... Nashville, Tenn.
S. & N. A. Div.: E. Marsh, *Supt.* Birmingham, Ala.
C. W. White, *M. M.* ... Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
M. S. Belknap, *Supt.* ... Montgomery, Ala.
J. N. Hall, *M. M.* (Mont. Shops) Montgomery, Ala.
N. O. Div.: J. T. Harrihan, *Supt.* New Orleans, La.
Wm. Adair, *M. M.* ... Mobile, Ala.
Memp. Div.: W. Colcamp, *Supt.* Memphis, Tenn.
J. V. Slusser, *M. M.* ... Memphis, Tenn.
St. L. Div.: Lee Howell, *Supt.* ... Evansville, Ind.
Thos. Walsh, *M. M.* ... Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma Rds.:
E. O. Saltmarsh, *Supt.* ... Pensacola, Fla.
R. B. Small, *M. M.* ... Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m.
J. H. Wilkins, *Pr. & Supt.* ... Louisville, Ga.

M

Maine Central R. R. 4-8½ g. 470 m. 58 lo. 1,335 c.
Payson Tucker, *Gen. Man.* ... Portland, Me.
Ira K. Russell, *M. M.* ... Waterville, Me.
C. H. Kenison, *M. C. B.* ... Augusta, Me.
Manchester & Keene R. R. (*See B. L. & C.*)
B. F. George, *Asst. Supt.* ... Keene, N. H.
Manhattan Ry. 4-8½ g. 32 m. 203 lo. 596 pass. c.
Frank K. Hain, *Gen. Man.* ... New York, N. Y.
C. L. Green, *Supt.* ... New York, N. Y.
T. W. Peeples, *M. M.* ... New York, N. Y.
H. A. Webster, *M. C. B.* ... New York, N. Y.
Marietta & North Georgia R. R. 3 g. 24 m. 1 lo. 5 c.
J. B. Glover, *Supt. & P. Agt.* ... Marietta, Ga.
E. A. Withers, *M. M.* ... Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g. 100 m. 42 lo. 2,530 cars.
Samuel Schoch, *Gen. Man.* ... Marquette, Mich.
M. B. McGee, *Pur. Agt.* ... Marquette, Mich.
W. H. Williams, *M. M.* ... Marquette, Mich.
H. D. Lyons, *M. C. B.* ... Marquette, Mich.
Massachusetts Central R. R. 4-8½ g. 48 m.
E. G. Allen, *Supt. & P. A.* ... Boston, Mass.
Memphis & Charleston R. R. (*See E. Tenn. Va. & Ga.*)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 272 c.
E. K. Sibley, *G. Man. & P. A.* Little Rock, Ark.
H. G. Fleming, *Supt.* ... Memphis, Tenn.
Thos. Rennell, *M. M.* ... Argenta, Ark.
P. Twitchell, *M. C. B.* ... Argenta, Ark.
Mexican Central Ry.
Howard Hinckley, *Pur. Agt.* ... Boston, Mass.
Main Line:
Rudolph Fink, *Gen. Man.* ... City of Mexico.
J. H. Garner, *Supt. Trans.* ... City of Mexico.
F. W. Johnson, *M. M.* ... City of Mexico.
J. H. O'Brien, *M. C. B.* ... City of Mexico.
Chihuahua Div.:
D. B. Robinson, *G. Supt.* El Paso del Norte, Mex.
J. N. Lauder, *Supt. R. S.* El Paso del Norte, Mex.
Tampico Div.:
Edward A. Whorf, *Supt.* ... Tampico, Mex.
Mexican National Ry. (*See Tex.-Mex.*)
Michigan Cen. R. R. 4-8½ g. 1,013 m. 266 lo. 8,000 c.
H. B. Ledyard, *Gen. Man.* ... Detroit, Mich.
E. C. Brown, *Gen. Supt.* ... Detroit, Mich.
W. P. Taylor, *Gen. Supt.* ... Buffalo, N. Y.
Allan Bourn, *Pur. Agt.* ... Detroit, Mich.
S. H. Edgerly, *Gen. M. M.* ... Jackson, Mich.
Robert Miller, *Gen. M. C. B.* ... Detroit, Mich.
East Div.: D. S. Sutherland, *Supt.* Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions:
W. A. Vaughan, *Supt.* ... Bay City, Mich.
C. E. Smart, *M. M.* ... Bay City, Mich.
Main Line: Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, *Supt.* ... Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, *Supt.* Chicago, Ill.
Middleburg & Schoharie; and
Schoharie Valley R. Rs. 4-8½ g. 10 m. 2 lo. 4 cars.
S. S. Danforth, *Gen. Supt.* ... Middleburg, N. Y.
Midland of Canada. 4-8½ g. 143 m. 12 lo. 503 cars.
Geo. A. Cox, *Gen. Man.* ... Peterborough, Ont.
W. B. Ferguson, *Gen. Supt.* Peterborough, Ont.
C. H. Crofts, *Storekeeper* ... Peterborough, Ont.
J. Haggas, *Mech. Supt.* ... Port Hope, Ont.
Edward Douglas, *M. C. B.* ... Port Hope, Ont.
H. Harry, *M. C. B.* ... Lindsay, Ont.
Toronto & Nipissing Div. 3-6 g. 105 m. 12 lo. 211 c.
J. Haggas, *M. M.* ... Uxbridge, Ont.
Chas. E. Caron, *M. C. B.* ... Uxbridge, Ont.
Midland No. Car. Ry. 5 g. 95 m. 9 lo. 82 cars.
John Gatling, *Gen. Man.* ... Newbern, N. C.
J. A. Bryan, *Supt.* ... Newbern, N. C.
J. W. Andrews, *Supt.* ... Goldsboro, N. C.
B. Manly, *Supt. of Mach.* ... Newbern, N. C.
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 322 m. 40 lo. 1,530 cars.
H. G. H. Reed, *Gen. Man. & P. Agt.* Milwaukee, Wis.
J. Donahue, *Supt.* ... Milwaukee, Wis.
Chas. S. Hayden, *Asst. Supt.* ... Manitowoc, Wis.
David B. Curtis, *Asst. Supt.* ... Oshkosh, Wis.
John Hickey, *M. M.* ... Manitowoc, Wis.
Milwaukee & Northern.
C. F. Dutton, *Gen. Supt.* ... Milwaukee, Wis.
N. S. Kimball, *M. M.* ... Green Bay, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 42 cars.
Chas. E. Holland, *Pr. & Supt.* ... Hancock, Mich.
W. H. Carr, *Pur. Agt.* ... Hancock, Mich.
T. J. Shellhorn, *M. M. & C. B.* Hancock, Mich.
Minneapolis & St. L. Ry. 4-8½ g. 506 m. 60 lo. 1,850 c.
W. H. Truesdale, *Supt.* ... Minneapolis, Minn.
Geo. F. Wilson, *Supt. of M.* Minneapolis, Minn.
Mississippi & Tenn. R. R. 4-8½ g. 101 m. 11 lo. 194 c.
M. Burke, *Gen. Supt.* ... Memphis, Tenn.
J. C. Rumsey, *M. M.* ... Memphis, Tenn.
S. J. Bolton, *M. C. B.* ... Memphis, Tenn.
Missouri Pacific Ry. (Leased and operated lines.)
4-8½ g. 5,879 m. 682 lo. 19,048 cars.
A. A. Talmage, *Gen. Man.* ... St. Louis, Mo.
R. B. Lyle, *Pur. Agt.* ... St. Louis, Mo.

(1) Missouri Pac. Ry. 4-8½ g. 2,708 m. 324 lo. 10,000 c.
John Hewitt, *Supt. Mach.*....St. Louis, Mo.
John Hodge, *Supt. Car Dep.*....St. Louis, Mo.
Main Line, Warder Cumming, *Supt.*..Sedalia, Mo.
W. W. Fagan, *Supt.*..W'n Div., Atchison, Kan.
Le Roy Bartlett, *Asst. M. M.*....St. Louis, Mo.
Geo. Walshe, *M. M.*....Sedalia, Mo.
M., K. & Tex. Div., *Supt.* Sedalia, Mo.
J. C. Barber, *Asst. Supt. Car Dep.* Sedalia, Mo.
J. W. Haines, *M. M.*....Parsons, Kan.
Cen. Br. Div., W. W. Fagan, *Supt.* Atchison, Kan.
H. V. Faries, *M. M.*....Atchison, Kan.
S. Irvin, *Asst. Supt. Car Dep.*..Atchison, Kan.
(1) St. L., I. M. & So. 4-8½ g. 859 m. 141 lo. 4,860 c.
Wm. Kerrigan, *Supt.*....Louis, Mo.
O. A. Haynes, *S. M. P. & M.*....De Soto, Mo.
St. Louis Div.: W. H. Harris, *M. M.*..De Soto, Mo.
Ark. Div.: R. M. Richardson, *M. M.* Little Rock, Ark.
H. H. Sessions, *M. C. B.*....Marshall, Tex.
(2) Texas & Pac. 4-8½ g. 1,487 m. 144 lo. 3,076 c.
J. M. Eddy, *Supt.*....Dallas, Tex.
O. A. Haynes, *S. M. P. & M.*....Marshall, Tex.
H. H. Sessions, *M. C. B.*....Marshall, Tex.
New Or. Div.: J. T. Whedon, *Supt.* Gouldsboro, La.
Perry Stevens, *M. M.*....Marshall, Tex.
Eastern Div.: J. Williams, *Supt.* Longview, Tex.
Rio Gr. Div.: G. O. Clinton, *Supt.* Big Springs, Tex.
Wm. Foley, *M. M.*....Big Springs, Tex.
(3) Int. & G. North. 4-8½ g. 776 m. 73 lo. 1,712 c.
Jos. Harrin, *Supt.*....Palestine, Tex.
O. A. Haynes, *S. M. P. & M.*...Palestine, Tex.
O. H. Johnson, *M. M.*....Palestine, Tex.
H. H. Sessions, *M. C. B.*....Marshall, Tex.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, *Trustee*....Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 7 lo. 112 cars.
W. L. Clark, *Gen. Supt.*....Columbus, Ga.
J. C. Albrecht, *M. M.*....Columbus, Ga.
A. J. Nix, *M. C. B.*....Columbus, Ga.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,353 cars.
G. Jordan, *V. Pr. & Gen. Man.*....Mobile, Ala.
F. Jordan, *Pur. Agt.*....Mobile, Ala.
R. H. Briggs, *Gen. M. M.*....Whistler, Ala.
J. T. Booth, *M. C. B.*....Whistler, Ala.
So'n Div., L. G. Motley, *Supt.*....Mobile, Ala.
John Fitzgerald, *M. M.*....Macon, Miss.
No'n Div.: E. S. Horsford, *Supt.* Jackson, Tenn.
M. T. Carson, *M. M.*....Jackson, Tenn.
Mobile & Spring Hill R. R. 5 g. 8 m. 10 lo. 90 cars.
F. Ingate, *Supt.*....Mobile, Ala.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 3 cars.
G. B. Weistling, *Supt. & P. A.*....Mont Alto, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 76c.
W. A. Stowell, *Supt.*....Montpelier, Vt.
Morgan's Louisiana & Tex. R. R. 4-8½ g. 165 m.
J. Kruttschnitt, *Supt.*....New Orleans, La.
C. Trumpy, *Pur. Agt.*....New Orleans, La.
N. Tilton, *M. M.*....Algiers, La.
Wm. O'Brien, *M. C. B.*....Algiers, La.
Muncy Creek Ry. 4-8½ g. 10 m.
Benj. G. Welch, *Rec. & P. Agt.* Hughesville, Pa.
J. V. Chamberlain, *Supt. & M. M.* do.

N

Nashville, Chattanooga & St. Louis R'y.,
5 g. 508 miles 87 lo. 1,979 cars.
J. W. Thomas, *G. Man. & P. Agt.* Nashville, Tenn.
M. J. C. Wrenne, *Supt.*....Nashville, Tenn.
James Cullen, *M. M. & C. B.*..Nashville, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 98 m. 7 lo. 72 c.
E. G. Frost, *Gen. Supt.*....Natchez, Miss.
Naugatuck R. R., 4-8½ g. 61 miles, 14 lo. 384 cars.
Geo. W. Beach, *Supt.*....Waterbury, Ct.
Henry Hanford, *M. M.*....Bridgeport, Ct.
Geo. W. Gray, *M. C. B.*....Bridgeport, Ct.
Nevada Central R. R. (*See Union Pac.*)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, *Supt.*....Grass Valley, Cal.
Jas. McCormick, *M. M. & C. B.* Grass Valley, Cal.
New Brunswick Ry. 4-8½ g. 194 m. 12 lo. 266 cars.
E. R. Burpee, *Gen. Man.*....Gibson, N. B.
Henry Osborn, *Gen. Supt.*....Gibson, N. B.
Alfred Seely, *Pur. Agt.*....Gibson, N. B.
Jesse Mathews, *M. M.*....Gibson, N. B.
T. N. Burpee, *M. C. B.*....Gibson, N. B.
New Brunswick & Can. Ry. 4-8½ g. 127 m. 12 lo. 184c.
Henry Osborn, *G. M. & P. A.* St. Andrew's, N. B.
John Stewart, *Supt.*....St. Stephen, N. B.
Thos. Armstrong, *M. M.*....St. Andrew's, N. B.
G. Houlton, *M. C. B.*....St. Andrew's, N. B.
New Haven & Derby R. R. 4-8½ g. 13 m. 3 lo. 58 c.
E. S. Quintard, *Supt.*....New Haven, Conn.
J. M. Whitlock, *M. M. & C. B.* New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 135 m. 26 lo. 572 c.
S. B. Opdyke, Jr., *Supt.*....New Haven, Ct.
C. N. Yeamans, *Pur. Agt.*....New Haven, Ct.
Henry Fox, *M. M.*....New Haven, Ct.
John Sweeny, *M. C. B.*....New Haven, Ct.
New Jersey & New York Ry. 4-6 g. 43 m. 6 lo. 40 c.
J. D. Hasbrouck, *Gen. Man.* Jersey City, N. J.
J. S. Drake, *Supt. & M. M.*....Hillsdale, N. J.
L. B. Van Wagonen, *M. C. B.*....Hillsdale, N. J.
New Jersey Southern Ry. (*See Central, N. J.*)
New London Northern R. R. (*See Central Ver.*)
New Orleans Pacific Ry. 5 g. 85 m. 10 lo. 206 cars.
H. S. Morse, *Supt.*....New Orleans, La.
E. R. Smith, *M. M. & C. B.*....New Orleans, La.
N. Y. Central & Hudson River R.R.
4-8½ g. 962 m. 676 lo. 22,539 cars.
J. M. Toucey, *Gen. Supt.*....New York, N. Y.
R. C. Moore, *Pur. Agt.*....New York, N. Y.
Wm. Buchanan, *Supt. M. P.*...New York, N. Y.
L. Garey, *Supt. Car Dept.*....New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, *Supt.* do.
P. McQ. Gibson, *M. M.*....New York, N. Y.
C. E. Garey, *M. C. B.*....Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, *Supt.* N. York, N. Y.
Peter Smith, *M. C. B.*....New York, N. Y.
E'n Div.: Zenas C. Priest, *Supt.*....Utica, N. Y.
John Ortton, *M. M.*....West Albany, N. Y.
D. Hoit, *M. C. B.*....West Albany, N. Y.
W'n Div.: Geo. H. Burrows, *Supt.* Rochester, N. Y.
S. L. White, *M. M.*....Syracuse, N. Y.
Amos Gould, *M. M.*....E. Buffalo, N. Y.
E. A. Olmstead, *M. C. B.*....E. Buffalo, N. Y.
C. H. Burchard, *M. C. B.*..E. Rochester, N. Y.
Ed. Donaby, *M. C. B.*....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 269 m. 115 lo. 4,838 c.
Lewis Williams, *Gen. Man.*....Cleveland, O.
Gen. Supt.....Cleveland, O.
Jno. W. Dougherty, *Pur. Agt.*....Cleveland, O.
Jno. Mackenzie, *Supt. M. P.*....Cleveland, O.
Eas'tn Div.: G. H. Kimball, *Supt.*..Cleveland, O.
E. A. Miller, *M. M.*....Conneaut, O.
West'n Div.: A. H. Evans, *Act. Supt.*..Chicago, Ill.
Jas. Eckford, *M. M.*....Bellevue, O.
New York City & Northern. 4-8½ g. 54 m. 9 lo. 368 c.
Frank S. Gannon, *Gen. Supt.* High Bridge, N. Y.
Theo. Wheeler, *M. M.*....High Bridge, N. Y.
New York, Lake Erie & Western R. R.
4-8½ g. 1,020 m. 568 loco. 30,500 cars.
Robt. Harris, *V. Pr. & G. Man.* New York, N. Y.
E. S. Bowen, *Gen. Supt.*....New York, N. Y.
J. A. Hardenburg, *Pur. Agt.*..New York, N. Y.
F. M. Wilder, *Supt. M. P. & M.*...Susqueh'a, Pa.
E'n Div.: E. O. Hill, *Supt.*....Jersey City, N. J.
J. H. Vreeland, *M. M.*....Jersey City, N. J.
J. N. Mileham, *M. C. B.*....Jersey City, N. J.
Del. Div.: W. J. Murphy, *Supt.*..Port Jervis, N. Y.
J. Van Vechten, *M. M. & C. B.* Pt. Jervis, N. Y.
Susq. Div.: I. Jolls, *Supt.*....Elmira, N. Y.
V. Blackburn, *M. M.*....Susquehanna, Pa.
D. B. Goodell, *M. C. B.*....Elmira, N. Y.
Buf. & R. Divs.: Chas. Neilson, *Supt.*; and
G. B. Ross, *M. M.*....Buffalo, N. Y.
M. Wilder, *M. C. B.*....Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, *Supt.* do.
W'n Div.: W. B. Coffin, *Supt.*..Hornellsville, N. Y.
Geo. H. Griggs, *M. M.*....Hornellsville, N. Y.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 123 lo. 2,768 cars.
E. M. Reed, *V. P. & Gen. Man.*..New Haven, Ct.
R. N. Dowd, *Pur. Agt.*....New Haven, Ct.
N. Y. & N. H. Div.: W. H. Stevenson, *Supt.*...N. Y.
Shore Line Div.:
O. M. Shepard, *Supt.*....N. Haven, Ct.
Air Line Div.: O. M. Shepard *Supt.* N. Haven, Ct.
H. Kettendorf, *Supt. M. P.*...New Haven, Ct.
Jas. Denver, *M. C. B.*....New Haven, Ct.
Hart. Div.: C. S. Davidson, *Supt.*....Hartford, Ct.
John Henny, Jr., *Supt. M. P. & M. C. B.*... do.

New York, Ontario & Western Ry.
4-8½ g. 249 m. 79 lo. 1,539 cars.
Chas. Paine, *Gen. Man.*....New York, N. Y.
I. W. Fowler, *Pur. Agt.*....Middletown, N. Y.
R. H. Soule, *Supt. M. P.*....New York, N. Y.
Edw. Minshull, *M. M. & C. B.* Middletown, N. Y.
Mid. Div.: N. R. Hankins, *Supt.* Middletown, N. Y.
No'n Div.: C. W. Lanpher, *Supt.*....Norwich, N. Y.
So. Div.: E. Canfield, *Supt.*....Tappan, N. Y.
New York, Pennsylvania & Ohio R. R.
4-8½ g. 564 m. 218 lo. 7,394 cars.
J. M. Ferris, *Gen. Man.*....Cleveland, Ohio.
J. H. Holway, *Pur. Agt.*....Cleveland, Ohio.
Wm. Fuller, *Gen. M. M. & C. B.*...Cleveland, O.
S. V. Smith, *Asst. Gen. M. C. B.*....Kent, Ohio.
E'n Div.: A. L. Dunbar, *Supt.*....Meadville, Pa.
J. A. Cooper, *M. M.*....Meadville, Pa.
D. S. Dockstader, *M. C. Rep.*...Meadville, Pa.
J. T. Fosdick, *For. Car Rep.* Salamanca, N. Y.
W'n Div.: J. W. Alsop, *Supt.*....Galion, O.
Wm. Hill, *M. M.*....Galion, O.
J. W. Holmes, *For. Car Rep.*....Galion, O.
Geo. Wilson, *For. Car Rep.*....Dayton, Ohio.
Maho'g Div.: N. F. Wood, *Supt.*....Cleveland, O.
N. Wright, *M. M.*....Cleveland, O.
C. N. Thorp, *M. C. Rep.*....Cleveland, O.
New York, Providence & Boston R. R.
4-8½ g. 72 m. 29 lo. 430 cars.
J. B. Gardner, *Supt.*....Providence, R. I.
Giles F. Ward, *Pur. Agt.*....Stonington, Conn.
J. H. Anderson, *M. M. & C. B.* Providence, R. I.
N. Y., Susquehanna & W'n. 4-9 g. 135 m. 28 lo. 925 c.
F. A. Potts, *Gen. Man.*....New York, N. Y.
C. D. McKelvey, *Asst. Supt.* Jersey City, N. J.
C. T. Demarest, *Pur. Agt.*....New York, N. Y.
W. C. Ennis, *M. M. & C. B.*...Wortendyke, N. J.
New York, West Shore & Buffalo Ry.
Chas. Paine, *Gen. Man.*....New York, N. Y.
R. H. Soule, *Supt. M. P.*....New York, N. Y.
P. S. Bemis, *Pur. Agt.*....New York, N. Y.
Harry Linn, *M. M.*
Walkill Ry. G. H. Graves, *Supt.*..Rondout, N. Y.
New York, Woodhaven & Rockaway R. R.
4-8½ g. 26 m. 8 lo. 101 cars.
J. M. Lunt, *Supt. & P. Agt.*..Hunter's Pt., L. I.
W. B. Turner, *M. M.*....Hunter's Point, L. I.
N. Y. & Greenwood Lake Ry. 4-8½ g. 44 m. 8 lo. 53 c.
Stephen Smith, *Supt.*....Jersey City, N. J.
J. A. Hardenburg, *Pur. Agt.*...New York, N. Y.
G. A. Hill, *M. M.*....Pompton, N. J.
N. Y. & Manhattan Beach Ry. 3 g. 23 m. 12 lo. 128 c.
D. C. Corbin, *Man. Dir.*....New York, N. Y.
O. Fairhurst, *M. M.*....Greenpoint, L. I.
New York & New England R. R.
4-8½ g. 463 m. 127 lo. 3,326 cars.
S. M. Felton, Jr., *Gen. Man.*....Boston, Mass.
W. W. McKim, *Pur. Agt.*....Boston, Mass.
Ross Kells, *Supt. M. P.*....Boston, Mass.
A. K. Mansfield, *Mech. Eng.*....Boston, Mass.
W. G. Tabor, *M. M.*....Boston, Mass.
H. E. Barker, *Gen. Fore.*....Norwood, Mass.
East Div.: C. C. F. Bent, *Supt.*....Boston, Mass.
Nor. Div.: P. St. M. Andrews, *Supt.*...Norwich, Ct.
W. A. Stone, *M. M.*....Norwich, Ct.
Prov. Div.: L. W. Palmer, *Supt.*..Providence, R. I.
Hfd. Div.: E. Holbrook, *Supt.*....Hartford, Ct.
E. M. Humstone, *M. M.*....Hartford, Ct.
D. F. Andregg, *For. C. Dept.*....Hartford, Ct.
Newburg, Dutchess & Conn. R. R. 4-8½ g. 58 miles.
C. L. Kimball, *Gen. Supt.*....Matteawan, N. Y.
W. G. Van Buskirk, *M. M. & C. B.*,
Dutchess Junction, N. Y.
Norfolk Southern. R. R. 4-8½ g. 79 m. 6 lo. 158 c.
M. K. King, *Gen. Man. & Pur. Agt.* Norfolk, Va.
J. S. Whitworth, *M. M. & C. B.*....Norfolk, Va.
Norfolk & Western R. R. 5 g. 428 m. 82 lo. 1,220 c.
J. H. Sands, *Gen. Supt.*....Lynchburg, Va.
W. C. De Armond, *Pur. Agt.*...Philadelphia, Pa.
C. Blackwell, *Supt. M. P.*....Roanoke, Va.
West'n Div.: Frank Huger, *Supt.*...Lynchburg, Va.
F. Sterk, *M. M.*....Lynchburg, Va.
East'n Div.: N. M. Osborne, *Supt.*...Petersburg, Va.
J. T. Robinett, *M. M. & C. B.*...Petersburg, Va.
North-Eastern R. R. of Ga. 5 g. 40 m. 2 lo. 18 cars.
H. R. Bernard, *Supt.*....Athens, Ga.
North-Eastern R. R. (S. C.) (*See Wil. & Wel.*)
North Pacific Coast R. R. 3 g. 84 m. 12 lo. 320 cars.
David Nye, *Gen. Supt.*....San Rafael, Cal.
W. F. Russell, *Pur. Agt.*....San Francisco, Cal.
J. Fowler, *M. M.*....Sancelito, Cal.
North Shore
A. Davis, *Gen. Man.*....Quebec, Can.
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 569 cars.
Geo. E. Todd, *Supt.*....Concord, N. H.
M. M. & C. B. & Pur. Agt... do.
Northern (N. J.) R. R. (*See N. Y., L. E. & W'n.*)
Northern Central Ry. (*See Penna. (R. R.)*
North'n Pacific R. R. 4-8½ g. 1,193 m. 104 lo. 3,089 c.
Herman Haupt, *Gen. Man.*....St. Paul, Minn.
John H. Ames, *Pur. Agt.*....St. Paul, Minn.
J. T. Odell, *A. Gen. Man.*....St. Paul, Minn.
Geo. W. Cushing, *Supt. M. P., M. & R. S.* do.
First Grand Div.: M. C. Kimberly, *Supt.*, do.
H. J. Small, *A. S. Mach.*....Brainerd, Minn.
Frank Howard, *M. C. B.*....Brainerd, Minn.
Sec. Grand Div.: J. M. Graham, *Supt.* Fargo, Dak.
A. Rupert, *M. M.*....Fargo, Dak.
E. F. Doran, *M. M.*....Mandan, Dak.
Third Grd Div.: S. R. Ainslie, *Supt.* Glendive, Mont.
S. L. Bean, *M. M.*....Glendive, Mont.
G. S. La Rue, *M. M.*....Billings, Mont.
(2) Western Div.: J. M. Buckley, *A. G. M.*; and
Otis Sprague, *Supt.*....New Tacoma, W. T.
H. D. Sanborn, *Pur. Agt.*....Portland, Ore.
W. T. Small, *A. S. Mach.* (W. D.) Sprague, W. T.
Robt. Walker, *M. C. B.*....Sprague, W. T.
F. C. Ford, *M. M.*....New Tacoma, W. T.
S. Wishart, *M. C. B.*....New Tacoma, W. T.
Pend d'Ore Div.:
F. F. Griffin, *Supt.*,....Ainsworth, W. T.
J. Evans, *M. M.*....Sprague, W. T.
Northern & North-W'n Ry. 5-6 & 4-8½ g. 50 lo. 1,033 c.
James Webster, *Supt.*....Toronto, Can.
W. C. Schreeber, *Pur. Agt.*....Toronto, Can.
P. Clarke, *M. M.*....Toronto, Can.

O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,160 cars.
A. A. Gaddis, *Gen. Man.*....Ogdensburg, N. Y.
Abr. Klohs, *Supt. & M. M.*....Malone, N. Y.
J. N. Brown, *M. C. B.*....Malone, N. Y.
Ohio Central R. R. 4-8½ g. 230 m. 45 lo. 4,700 cars.
John E. Martin, *Gen. Man.*....Toledo, O.
T. M. Peeler, *Supt.*....Bucyrus, O.
F. W. Stewart, *Pur. Agt.*....Toledo, O.
J. B. Morgan, *M. M. & C. B.*....Bucyrus, O.
Ohio Southern. 4-8½ g. 119 m. 19 lo. 623 cars.
D. R. Ennis, *Supt.*....Springfield, O.
H. C. Norton, *Pur. Agt.*....Indianapolis, Ind.
W. B. Warren, *M. M.*....Springfield, O.
Ohio & Mississippi Ry. 4-9 g. 615 m. 112 lo. 2,501 cars.
W. W. Peabody, *Gen. Man.*....Cincinnati, O.
G. E. Atwood, *Pur. Agt.*....Cincinnati, O.
J. H. Setchel, *Gen. M. M.*....Cincinnati, O.
Cin. Div.: C. B. Cole, *Supt.*....Seymour, Ind.
John Thumser, *M. M.*....Seymour, Ind.
J. P. Coulter, *M. C. B.*....Aurora, Ind.
Arthur Donaldson, *M. M.*....Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, *Supt.* St. Louis, Mo.
J. W. Stokes, *M. M.* (Spring. Div.)..Pana, Ill.
Louisv. Div.: C. B. Cole, *Supt.*....Louisville, Ky.
Oil City & Chicago R. R. 4-9 g. 36 m. 6 lo. 50 cars.
A. Vandiwort, *Supt.*....New Castle, Pa.
Oil City & Ridgway R. R. 4-8½ g. 6 m. 1 lo. 43 cars.
A. F. Kent, *Gen. Man.*....Oil City, Pa.
Old Colony R. R. 4-8½ g. 463 m. 110 lo. 2,862 cars.
J. R. Kendrick, *Gen. Man.*....Boston, Mass.
Main Li. Div.: J. H. French, *Supt.*...Boston, Mass.
R. W. Husted, *Pur. Agt.*....Boston, Mass.
J. K. Taylor, *M. M.*....Boston, Mass.
M. C. B.....Boston, Mass.
Cape Cod Div.: C. H. Nye, *Supt.*..Hyannis, Mass.
No. Div.: S. A. Webber, *Supt.*....Fitchburg, Mass.
George W. Reynolds, *M. M.*....Taunton, Mass.
Sam. Stevens, *M. C. B.*....Taunton, Mass.
Olean, Bradford & Warren; Bradford; Kinzua; and
Kendall & Eldred R. Rs. 3 g. 38 m. 9 lo. 222 cars.
J. W. Watson, *Gen. Supt.*....Olean, N. Y.

J. H. Poole, *Pur. Agt.*....Buffalo, N. Y.
Charles Turner, *M. M. & C. B.*....Olean, N. Y.
Oregon Ry. & Nav. Co. 4-8½ g. 225 m. 31 lo. 930 cars.
C. H. Prescott, *Manager*....Portland, Ore.
K. Von Oterendorf, *Supt.* (O. Div.) S. F'cisco, Cal.
H. S. Rowe, *Supt.* (Ry Div.)....Portland, Ore.
J. M. Drake, *Pur. Agt.*....Portland, Ore.
C. C. Hobart, *Gen. M. M.*....The Dalles, Ore.
Chas. A. Phipps, *M. C. B.*....The Dalles, Ore.
N. G. Div.: Wm. Reed, *Man.*....Portland, Ore.
James Walch, *M. M.*....Portland, Ore.
Oregon & California R. R. 4-8½ g. 200 m. 14 lo. 286 c.
R. Koehler, *Act. Man.*....Portland, Ore.
J. Brandt, *Gen. Supt.*....Portland, Ore.
A. Brandt, *M. M.*....Portland, Ore.
Owensboro & Nashville R. R. 5 g. 44 m. 3 lo. 70 c.
O. M. Dunn, *Supt.*....Owensboro, Ky.
H. M. Gabel, *M. M. & C. B.*....Owensboro, Ky.

P

Pacific Coast Ry. 3 g. 11 m.
J. M. Fillmore, *Manager* San Luis Obispo, Cal.
W. H. Masterman, *M. M. & C. B.* do.
Painesville & Youngstown R. R. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, *Rec. & Man.*....Painesville, O.
J. A. Newcome, *Supt.*....Painesville, O.
E. B. Baldwin, *M. M.*....Painesville, O.
Panama R. R. 5 g. 58 m. 14 lo. 534 cars.
H. A. Woods, *Supt.*....Aspinwall, U. S. Col.
E. Z. Penfield, *Pur. Agt.*....New York, N. Y.
D. P. Wright, *M. M.*....Aspinwall, U. S. Col.
Parker & Karns City; and
Karns City & Butler R. Rs. 3 g. 27 m. 5 lo. 84 cars.
W. C. Moberly, *Gen. Supt.*....Parker City, Pa.
Philip Davies, *M. M.*....Parker City, Pa.
Wm. Wolford, *M. C. B.*....Parker City, Pa.
Passumpsic R. R. 4-8½ g. 145 m. 28 lo. 980 cars.
E. Raymond, *Pres. & Pur. Agt.*..Boston, Mass.
H. E. Folsom, *Supt.*....Lyndonville, Vt.
L. L. Brigham, *M. M.*....Lyndonville, Vt.
L. F. Woodard, *M. C. B.*....Lyndonville, Vt.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
Samuel Dickey, *Gen. Man.*....York, Pa.
G. R. Dickey, *Supt. & Pur. Agt.*....York, Pa.
E. H. Williams, *M. C. B.*....York, Pa.
E. Div.: S. Dickey, *Supt.*....Oxford, Pa.
W. P. Kirk, *M. M.*....Oxford, Pa.
Pennsylvania Co.'s (9) Roads.
4-9 g. 2,838 m. 817 lo. 29,432 cars.
Wm. Mullins, *Gen. Pur. Agt.*....Pittsburg, Pa.
Joseph Wood, *Supt. M. P.*....Fort Wayne, Ind.
(1) Clev. & Pittsb'g R. R. 4-9 g. 224 m. 97 lo. 3,336 c.
R. F. Smith, *Asst. Man.*....Cleveland, O.
Philip Bruner, *Supt.*....Wellsville, O.
W. F. Beardsley, *Mast. of Mach.* Wellsville, O.
(2 & 3) Erie & Ashtabula Rds. 178 m. 29 lo. 1,340 c.
John M. Kimball, *Supt.*....Youngstown, O.
J. A. Wood, *Gen. For. Shops*....Erie, Pa.
(4) Indianap. & Vincennes Rd. 117 m. 11 lo. 303 cars.
Jas. J. Turner, *Supt.*....Indianapolis, Ind.
(5) Jeffersonville, Madison & Indianapolis R. R.
4-9 g. 217 m. 47 lo. 784 cars.
E. W. McKenna, *Supt.*....Louisville, Ky.
Wm. Swanston, *M. M.*....Jeffersonville, Ind.
Edw. Austin, *M. C. B.*....Jeffersonville, Ind.
(6) Northwestern Ohio Ry. 4-9 g. 79 m.
J. S. Morris, *Supt.*....Toledo, O.
(7) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 278 lo. 6,782 cars.
E'n Div.: John Thomas, *Supt.*....Allegheny, Pa.
Geo. J. Parkin, *M. M.*....Allegheny, Pa.
D. M. Peppard, *M. M.*....Crestline, O.
W'n Div.: John Thomas, *Supt.*..Ft. Wayne, Ind.
F. D. Casanave, *M. M.*....Ft. Wayne, Ind.
A. H. Somers, *Gen. For. Shops*..Chicago, Ill.
(8) Pittsburg, Cincinnati & St. Louis Ry.
4-9 g. 1,172 m. 336 lo. 6,482 cars.
Jas. McCrea, *Gen. Supt.*....Columbus, O.
E. B. Wall, *Supt. M. P. & M.*....Columbus, O.
P. & Col. Div.: E. B. Taylor, *Supt.* Dennison, O.
C. B. Street, *M. M.*....Dennison, O.
Robt. Curtis, *M. M.*....Columbus, O.
Thos. Chamberlain, *M. C. B.*..Columbus, O.
C. & M. V. Div.: W. F. Black, *Supt.* Zanesville, O.
Leroy Kells, *M. M.*....Cincinnati, O.
Daniel Jewell, *M. C. B.*....Lancaster, O.
Li. Mi. Div.: Ralph Peters, *Supt.*....Cincinnati, O.
Leroy Kells, *M. M.*....Cincinnati, O.
Jos. Underwood, *Gen. Foreman* Cincinnati, O.
Ind. Divs.: J. F. Miller, *Supt.*....Richmond, Ind.
W. W. Reynolds, *M. M.*....Logansport, Ind.
Chas. H. Starr, *M. C. B.*....Logansport, Ind.
W. C. Arp, *Gen. For.*....Indianapolis, Ind.
Chi. Div.: Chas. Watts, *Supt.*..Logansport, Ind.
(9) Terre Haute & Indianapolis R. R.
4-9 g. 374 m. 83 lo. 2,868 cars.
Joseph Hill, *Gen. Supt.*....St. Louis, Mo.
C. R. Peddle, *P. Agt.*....St. Louis, Mo.
Geo. H. Prescott, *S. M. P. & M.* Terre Haute, Ind.
E. D. Carter, *M. C. B.*....Terre Haute, Ind.
Clinton Idler, *M. M.*....Indianapolis, Ind.
Chas. Butler, *M. M.*....Effingham, Ill.
A. W. Quakenbush, *M. M.*..Logansport, Ind.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 2,704 m. 1,271 loco. 51,894 cars.
Chas. E. Pugh, *Gen. Man.*....Philadelphia, Pa.
Enoch Lewis, *Pur. Agt.*....Philadelphia, Pa.
John Reilly, *Supt. Trans.*....Philadelphia, Pa.
T. N. Ely, *Gen. S. M. P.* (4 Gen. Divs.) Altoona, Pa.
(1) Pennsylvania R. R. Divs.
4-9 g. 1,105 m. 627 lo. 35,583 cars.
S. M. Prevost, *Gen. Supt.*....Altoona, Pa.
Frank L. Sheppard, *Supt. M. P.*..Altoona, Pa.
G. W. Strattan, *M. M.*....Altoona, Pa.
Jno. P. Levan, *Gen. Fore.*....Altoona, Pa.
Phila. Div.: Tho. Gucker, *Supt.* Philadelphia, Pa.
H. D. Garrett, *M. M.*....W. Philadelphia, Pa.
I. W. Van Houten, *Gen. For.*...W. Phila., Pa.
Mid. Div.: O. E. McClellan, *Supt.* Harrisburg, Pa.
E. L. Caum, *M. M.*....Harrisburg, Pa.
Samuel W. Myers, *Gen. For.* Harrisburg, Pa.
Alt'a Div.: Jas. Reed, *Supt.*....Altoona, Pa.
Pitts. Div.: Robert Pitcairn, *Supt.*....Pittsburg, Pa.
D. O. Shaver, *M. M.*....Pittsburg, Pa.
J. G. Stewart, *Gen. For.*....Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, *Supt.* Blairsville, Pa.
Wm. B. Norris, *M. M.*....Blairsville, Pa.
M. H. Falls, *Gen. For.*....Blairsville, Pa.
Fred. Div.: J. B. Hutchinson, *Supt.*....York, Pa.
Tyrone Div.: S. S. Blair, *Supt.*....Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, *Supt.* Lewistown, Pa.
Bed. Div.: R. L. Holliday, *Supt.*....Bedford, Pa.
Monong. Div.: David M. Watt, *Supt.* Pittsburg, Pa.
Wm. Lininger, *M. M.*....Pittsburg, Pa.
(2) United R. Rs. of N. J. Divs. 414 m. 257 lo. 4,608 c.
F. Wolcott Jackson, *Gen. St.* Jersey City, N. J.
N. Y. Div.: Robt. E. Pettit, *Supt.* Jersey City, N. J.
H. S. Hayward, *St. M. P.*...Jersey City, N. J.
David H. Baker, *Gen. For.* Jersey City, N. J.
L. A. Bosdevex, *M. M.*....Jersey City, N. J.
E. F. Bosdevex, *Gen. For.*..Jersey City, N. J.
Belv. Div.: J. A. Anderson, *Supt.* Lambertv.., N. J.
R. McDowell, *M. M.*....Lambertville, N. J.
Amboy Div.: I. S. Buckalew, *Supt.* Camden, N. J.
Thos. Kerr, *M. M.*....So. Amboy, N. J.
P. S. Bogart, *Gen. For.*....So. Amboy, N. J.
(3) West Jersey R. R. 4-9 g. 163 m. 22 lo. 342 cars.
Joseph Crawford, *Supt.*....Camden, N. J.
W. McAllister, *M. M.*....Camden, N. J.
C. C. Williams, *Gen. For.*....Camden, N. J.
(4) Phila., Wilm. & Balt. R.R. 212 m. 86 lo. 1,488 c.
H. F. Kenney, *Gen. Supt.*....Philadelphia, Pa.
S. A. Hodgman, *M. M.*....Wilmington, Del.
W. H. Lungren, *Gen. For.*....Wilmington, Del.
Cen. Div.: T. A. Roberts, *Supt.*..Philadelphia, Pa.
S. D. Danfield, *M. M. & C. B.*....Chester, Pa.
Del. Div.: I. N. Mills, *Supt.*....Wilmington, Del.
J. A. Baynard, *M. M.*....Oxford, Md.
C. E. Mason, *M. C. B.*....Oxford, Md.
Md. Div.: H. H. Carter, *Supt.*....
(5) Phila. & Erie R. R. Divs.: 370 m. 117 lo. 3,481 c.
R. Neilson, *Gen. Supt.*....Williamsport, Pa.
A. O. Dayton, *Supt. Mo. Po.* Williamsport, Pa.
E'n. Div.: *Supt.* Williamsport, Pa.
Sun. H. & W. Div.: A. Walters, *Supt.*; and
H. K. Stout, *M. M.*....Sunbury, Pa.
Mid. Div.: Tho. A. Roberts, *Supt.*....Renova, Pa.
Wm. L. Holman, *M. M.*....Renova, Pa.
West'n Div.: J. W. Reynolds, *Supt.*....Erie, Pa.
W. T. Smith, *M. M.*....Erie, Pa.

(6) Northern Central Ry. 4-9 g. 326 m. 152 lo. 6,163 c.
Robert Neilson, *Gen. Supt.*...Williamsport, Pa.
A. O. Dayton, *Supt. M. P.*....Williamsport, Pa.
A. W. Sumner, *Pur. Agt.*....Baltimore, Md.
Susq. Div.: E. B. Westfall, *Supt.* Williamsport, Pa.
Sham. Div.: *Supt.*....Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, *Supt.*..Elmira, N. Y.
Jas. Strode, *M. M.*....Elmira, N. Y.
J. C. Dyott, *Gen. For.*....Elmira, N. Y.
Baltimore Div.: H. W. Knapp, *Supt.* Baltimore, Md.
(7) Balt. & Pot. & Alex. & Fred. 128 m. 29 lo. 356 c.
L. K. Lodge, *Gen. Supt.*....Baltimore, Md.
A. W. Sumner, *Pur. Agt.*....Baltimore, Md.
J. M. Wallis, *Supt. Mo. Po.*....Baltimore, Md.
J. M. Coale, *M. M.*....Baltimore, Md.
G. W. Demarest, *Gen. For.*....Baltimore, Md.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 2,871 c.
J. B. Smith, *Gen. Supt.*....Dunmore, Pa.
And. Crane, *M. M.*....Dunmore, Pa.
Geo. W. Simpson, *M. C. B.*....Dunmore, Pa.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, *Gen. Supt.*....Ridgeway, Pa.
Pensacola & Perdido R. R. 6 g. 8 m. 5 lo. 73 cars.
B. F. Simmons, *Pr. & Supt.*....Pensacola, Fla.
H. W. Simmons, *Pur. Agt.*....Pensacola, Fla.
Peoria, Decatur & Evansville Ry.
4-8½ g. 254 m. 30 lo. 1,458 cars.
G. L. Bradbury, *Gen. Man.*....Peoria, Ill.
P. Reilly, *M. M.*....Mattoon, Ill.
Peoria & Farmington R. R. 4-8½ g. 25 m. 2 lo. 25 c.
D. P. Phelps, *Gen. Man.*....Monmouth, Ill.
John F. Wallace, *Supt.*....Farmington, Ill.
Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 100 c.
Thos. B. Burnett, *Gen. Supt. & P. A.* Peoria, Ill.
R. F. Hurd, *M. M. & C. B.*....Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, *Supt.*....Perkiomen Junction, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 131 cars.
R. M. Sully, *Gen. Supt.*....Petersburg, Va.
L. E. Clark, *Pur. Agt.*....Petersburg, Va.
R. B. Andrews, *M. M.*....Petersburg, Va.
J. W. Fleming, *M. C. B.*....Petersburg, Va.
Phila., Wilmington & Balt. R. R. (*See Penna. R. R.*)
Phila. & Atlantic City Ry. 3-6 g. 54 m. 11 lo. 134 cars.
F. S. Urie, *Supt. & Pur. Agt.* Philadelphia, Pa.
John T. Keihner, *M. M.*....Camden, N. J.
E. Lippincott, *M. C. B.*....Camden, N. J.
Phila. & Reading. 4-8½ g. 486 m. 539 lo. 24,606 cars.
John E. Wootten, *Gen. Man.*..Philadelphia, Pa.
W. S. Wilson, *Pur. Agt.*....Philadelphia, Pa.
Geo. Eltz, *Supt. Trans.*....Reading, Pa.
L. B. Paxson, *Eng. of Mach.*....Reading, Pa.
No. Pa. & B. Brk. Div.:
I. A. Sweigard, *Supt.*....Philadelphia, Pa.
Mah. & Sham. Br.:
J. H. Olhausen, *Supt.*....Mahoney Plane, Pa.
Cat. & Willp't. Br.:
D. C. Reinhart, *Supt.*....Williamsport, Pa.
M. Hill & S. Haven Br.:
A. A. Hesser, *Supt.*....Cressona, Pa.
Sch. & Sus. Br.:
H. H. Tracy, *Supt.*....Pine Grove, Pa.
Read. & Col. Br.:
A. M. Wilson, *Supt.*....Columbia, Pa.
Pittsburg, Bradford & Buffalo Ry. 3 g. 31 m. 4 lo. 79c.
J. M. Dickey, *Gen. Man.*....Foxburg, Pa.
W. D. Reed, *Supt.*....Foxburg, Pa.
Pittsburg, Cincinnati & St. Louis Ry. (*See Penna. Co.*)
Pittsburg, Ft. Wayne & Chicago Ry. (*See Penna. Co.*)
Pittsburg Southern Ry. 3 g. 38 m. 4 lo. 64 cars.
M. D. Hays, *Supt. & P. A.*....Pittsburg, Pa.
W. S. Marshall, *M. M.*....Pittsburg, Pa.
E. B. Gosline, *M. C. B.*....Pittsburg, Pa.
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 388 c.
James M. Bailey, *Gen. Supt.*....Pittsburg, Pa.
Holmes Ward, *M. M.*....Castle Shannon, Pa.
Wm. E. Long, *M. C. B.*....Pittsburg, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 31 lo. 1,688 c.
W. C. Quincy, *Gen. Man.*....Pittsburg, Pa.
R. W. Jones, *Mast. Trans.*....Pittsburg, Pa.
S. W. Haines, *M. M.*....Pittsburg, Pa.
Pittsburg & Western R. R. 3 g. 47 m. 2 lo. 76 cars.
W. C. Mobley, *Gen. Supt.*....Pittsburg, Pa.
C. P. Ford, *Pur. Agt.*....Allegheny, Pa.
W. L. Hofecker, *M. M.*....Zelienople, Pa.
Port Huron & No.-Western Ry. 3 g. 105 m. 4 lo. 66 c.
H. McMorran, *G. Man. & P. A.* Port Huron, Mich.
I. R. Wadsworth, *Supt.*....Port Huron, Mich.
Chas. Deifenbach, *M. M.*....Port Huron, Mich.
Benj. Hillier, *M. C. B.*....Port Huron, Mich.
Port Royal & Augusta Ry. 5 g. 112 m. 13 lo. 235 c.
J. N. Bass, *Supt.*....Augusta, Ga.
John McCann, *M. M.*....Augusta, Ga.
J. H. Milton, *M. C. B.*....Augusta, Ga.
Portland & Ogdensburg. 4-8½ g. 114 m. 11 lo. 289 c.
J. Hamilton, *Gen. Supt. & P. A.*..Portland, Me.
Geo. H. Poor, *M. M.*....Portland, Me.
W. G. Brewer, *M. C. B.*....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 7 lo. 230 c.
J. W. Peters, *Supt. & Pur. Agt.*..Portland, Me.
E. H. C. Tompson, *For. of Mach.*..Portland, Me.
David Dow, *For. of Car Repairs* Portland, Me.
Potomac, Fred.'g & Pied. R. R. 3 g. 38 m. 2 lo. 38 c.
Will M. Grafton, *Supt.*....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 64 c.
J. A. Perkins, *Supt.*....Poughkeepsie, N. Y.
John L. Donaldson, *M. M.* Poughkeepsie, N. Y.
Prince Edward Island Ry. 3-6 g. 199 m. 17 lo. 280 c.
Jas. Coleman, *Supt. & Pur. Agt.*;
Jos. Unsworth, *M. Supt. & Storekeeper*; and
D. M. Fraser, *M. C. B.*..Charlottetown, P. E. I.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 5 lo. 38 c.
Waterman Stone, *Supt.*....Providence, R. I.
Rufus Smith, *M. M. & C. B.*....Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 3 lo. 83 c.
Wm. Tinkham, *Gen. Man.*....Providence, R. I.
G. T. Richardson, *M. M.*....Providence, R. I.
Prov. & Worcester. 4-8½ g. 66 m. 30 lo. 858 c.
W. E. Chamberlain, *Supt.*....Providence, R. I.
A. Griggs, *Supt. L. & C. D.*....Providence, R. I.
Pul'man's Palace Car Co. 472 passenger cars.
A. B. Pullman, *2d V.-Pr. & G. M.*..Chicago, Ill.
Geo. F. Brown, *Gen. Supt.*....Chicago, Ill.
Wm. A. Angell, *Pur. Agt.*....Chicago, Ill.
S. W. Bretzfield, *Asst. Pur. Agt.* New York, N. Y.
A. Rapp, *Man.* (Chicago Works)..Chicago, Ill.
H. L. Spaulding, *Man.* (Det. Shops). Detroit, Mich.
E. A. Benson, *Supt. Shops*....St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 139 m. 3 lo. 79 cars.
A. Steele, *Supt.*....Sherbrooke, Que.
R. D. Morkill, *Pur. Agt.*....Sherbrooke, P. Q.
Jas. Selveright, *M. M.*....Sherbrooke, P. Q.
Quebec & Lake St. John Ry. 4-8½ g. 24 m. 3 lo. 43 c.
J. G. Scott, *Manager*....Quebec, Can.
Frank Fournier, *Supt.*....St. Raymond, P. Q.
John T. Eames, *M. M.*....St. Raymond, P. Q.

R

Raleigh & Augusta Air-Line: Carolina Central.
Raleigh & Gaston R. Rs. 4-8½ g. 436 m. 47 lo. 994 c.
John C. Winder, *Gen. Man. & P. A.* Raleigh, N. C.
Raleigh Rds. 4-8½ g. 194 m. 21 lo. 563 cars.
B. R. Harding, *Supt. of Mach.* Raleigh, N. C.
Carolina Cen. R.R. 4-8½ g. 242 m. 26 lo. 431 c.
L. C. Jones, *Gen. Supt.*....Wilmington, N. C.
James Maglenn, *M. of Mach.* Laurinburg, N. C.
S. R. Ethridge, *M. C. B.*....Laurinburg, N. C.
Rensselaer & Saratoga R.R. (*See Del. & Hud. Can. Co.*)
Rhinebeck & Connecticut. (*See Hart. & Ct. W'n.*)
Richmond, Fredericksburg & Potomac R. R.
4-8½ g. 83 m. 14 lo. 137 cars.
E. T. D. Myers, *Gen. Supt.*....Richmond, Va.
T. L. Courtney, *Asst. Supt.*....Richmond, Va.
H. Kuhn, *M. M.*....Richmond, Va.
W. H. Trainham, *M. C. B.*....Richmond, Va.
Richmond & Alleghany R. R. 4-9 g. 260 m. 19 lo. 837c.
Decatur Axtell, *V. P. & Gen. Man.* Richmond, Va.
M. Sweeney, *Pur. Agt.*....Richmond, Va.
Geo. D. Harris, *M. M. & C. B.*....Richmond, Va.
Richmond & Danville R. R. Co.'s Roads.
1,718 miles 218 loco. 3,616 cars.
T. M. R. Talcott, *Gen. Man.*....Richmond, Va.
J. P. Minetree, *Pur. Agt.*....Richmond, Va.
R. D. Wade, *Supt. Mo. Po.*....Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 829 m. 131 lo. 2,480 cars.
Peyton Randolph, *As. G. Man.*..Richmond, Va.
Rich. & Dan. Div.: 5 g. 320 m. 80 lo. 1,797 c.
Wm. H. Green, *Supt.*....Richmond, Va.

T. W. Gentry, *M. M.*........Richmond, Va.
J. B. Vaughan, *For. Car Sh*...Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, *Supt*........Raleigh, N. C.
W. H. Turrentine, *M. M.* Comp'y's Shops, N. C.
J. C. Holt, *For. Car Sh.* Comp'y's Shops, N. C.
Atlanta & Char. Air Line. 5 g. 286m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 37 c.
I. Y. Sage, *Supt*........Atlanta, Ga.
W. A. Walden, *M. M.*........Atlanta, Ga.
Z. T. Smith, *For. Car Sh*........Atlanta, Ga.
(2 Charlotte, Col. & Aug. R. R. 5g. 239 m. 22 lo. 287 c.
G. R. Talcott, *Supt*........Columbia, S. C.
J. H. Green, *M. M.* (2 roads)...Columbia, S. C.
J. H. Perkins, *For. Car Sh*...Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 218 c.
G. S. Talcott, *Supt*........Columbia, S. C.
J. O. Meredith, *For. E. & C. Rep.*. do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo 631 c.
W. M. S. Dunn, *Eng. & Supt.* Alexandria, Va.
J. E. Waddey, *M. of M.*......Alexandria, Va.
J. T. Nalls, *M. C. B*........Alexandria, Va.
Richmond & Petersburg R.R. 4-8½ g. 25 m. 8 lo. 130 c
J. R. Kenly, *Supt*........Richmond, Va.
John O'Brien, *M. M*........Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 39 cars.
M. J. Gomila, *Rec. & Gen. Man* Brownsville, Tex.
G. W. Rendall, *M. M.*........Brownsville, Tex.
M. Markwood, *M. C. B*........Brownsville, Tex.
Rochester & Pittsb'g R.R. 4-8½ g. 134 m. 11 lo. 612 c
Geo. E. Merchant, *Gen. Man*...Rochester N. Y.
J. P. Hovey, *M. M*........Rochester, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 12 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt.* Rock Island, Ill.
R. I. & P. Ry.: H. B. Sudlow, *Supt. & P. A.* do.
Joseph Elder, *M. M*........Peoria, Ill.
R. I. & M. C. Rd.: B. T. Cable, *Supt.* R'k Island, Ill.
J. H. Parks, *M. M*........Rock Island, Ill.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 13 cars.
Eben Hillyer, *Supt*........Rome, Ga.
O. W. Harbin, *M. M. & C. B*........Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 409 m. 51 lo. 1,400 cars.
H. M. Britton, *Gen. Man. & P. A.* Oswego, N. Y.
Geo. H. Haselton, *M. M. & C. B.* Oswego, N. Y.
Eastern Div.:
J. D. Remington, *A. Supt*....Watertown, N. Y.
Western Div.:
W. H. Chauncey, *A. Supt*........Oswego, N. Y.
Rumford Falls & Buckfield R.R. 4-8½ g. 29 m. 2 l. 42 c.
L. L. Lincoln, *Supt*........Canton, Me.
O. Spaulding, *Pur. Agt*........Buckfield, Me.
E. R. Oldham, *M. M*........Buckfield, Me.

S

Sabine & East Texas Ry. 4-8½ g. 104 m. 5 lo. 333 c.
R. H. Cousins, *Gen. Supt*........Beaumont, Tex.
W. A. Meagher, *M. M*........Beaumont, Tex.
Sacramento & Placerville R. R. 4-8½ g. 49 m. 3 lo. 68 c.
J. B. Wright, *Supt. & P. A*....Sacramento, Cal.
A. J. Stevens, *M. M*........Sacramento, Cal.
Benj. Welch, *M. C. B*........Sacramento, Cal.
Saginaw Bay & Northw'n R. R. 4-8½ g. 30 miles.
J. Jackson, *Gen. Man*........Pinconning, Mich.
F. T. Lillote, *Act. Pur. Agt*...Pinconning, Mich
Edward Keeler, *M. M*........Pinconning, Mich.
Saginaw Valley & St. Louis R. R. 4-8½g. 35 m. 4 l. 64 c
N. W. Merrill, *Supt*........Saginaw, Mich.
Allan Bourn, *Pur. Agt*........Detroit, Mich.
Geo. C. Watrous, *M. M*........Iona, Mich.
San Francisco & No. Pac. 4-8½ g. 112 m. 11 lo. 244 c.
Arthur Hughes, *Gen. Man*..San Francisco, Cal.
H. C. Whiting, *Supt*........Petaluma, Cal.
Ed. Reynolds, *Gen. M. M*........Donahue, Cal.
Savannah, Florida & W'n Ry. 5 g. 422 m. 50 lo. 695 c.
H. S. Haines, *Gen. Man*........Savannah, Ga.
R. G. Fleming, *Supt*........Savannah, Ga.
F. S. Pendergast, *Ch. Eng*........Savannah, Ga.
A. A. Aveilhé, *Pur. Agt*........Savannah, Ga.
G. M. D. Riley, *M. of Mach*........Savannah, Ga.
Jos. W. Rowell, *For. Car Dept.* Savannah, Ga.
Sav., Griffin & No. Ala. R. R. *Op. by Central (Ga.).*
Schuylkill & Lehigh R. R. 4-8½ g. 43 miles.
Eldredge Dale, *Supt*........Reading, Pa.
Schoharie Valley R. R. (*See Middleburg & Sch.*)
Scioto Valley R. R. 4-8½ g. 131 m. 15 lo. 460 cars.
Geo. Skinner, *Supt*........Columbus, O
R. Bromley, *M. M. & P. A*........Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½g. 80 m. 21 lo. 381 c.
E. G. Ghio, *Mast. of Trans*....Portsmouth, Va.
M. M. Pendleton, *S. M. P. & M.* Portsmouth, Va.
Shenandoah Valley R. R. 4-8½ g. 143 m. 15 lo. 104 c.
J. H. Sands, *Supt*........Roanoke, Va.
W. C. De Armond, *Pur. Agt*..Philadelphia, Pa.
Chas. Blackwell, *Supt. of M. P.*..Roanoke, Va.
W. Welch, *M. M.*........Roanoke, Va.
Shenango & Allegheny R.R. 4-9½ g. 47 m. 6 lo. 156 c.
J. T. Blair, *G. Supt. & Pur. Agt.* Greenville, Pa.
Edw. Richardson, *M. M. & C. B.* Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 27 cars.
Edwin McNeill, *Supt*........Litchfield, Ct.
C. M. Allen, *M. M*........Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, *Supt. & Pur. Agt*....Ripley, Miss.
W. H. Phelps, *M. M*........Ripley, Miss.
Sioux City & Pacific R. R. 4-8½g. 427 m. 21 lo. 594 c.
P. E. Hall, *Gen. Man. & P. A.* Cedar Rapids, Ia.
C. M. Lawler, *Gen. Supt*....Missouri Valley, Ia.
J. S. Wattles, *Supt*........Missouri Valley, Ia.
C. F. McCoy, *Asst. Supt*........Blair, Neb.
S. A. Teal, *M. M*........Missouri Valley, Ia.
W. H. Ramseyer, *M. C. B.*..Missouri Valley, Ia.
Sodus Bay & Southern Ry. 4-8½ g. 34 m. 4 lo. 40 c.
S. B. Stuart, *Supt. & Pur. Agt.* Sodus Point, N. Y.
C. H. Hill, *M. C. B*........Sodus Point, N. Y.
South Carolina Ry. 5 g. 243 m. 42 lo. 685 cars.
John B. Peck, *Gen. Man*........Charleston, S. C.
S. B. Pickens, *Pur. Agt*........Charleston, S. C.
P. J. Cochrane, *Mast. of Mach.* Charleston, S. C.
Geo. H. Gramling, *M. C. B*...Charleston, S. C.
South-Eastern Ry. 4-8½ g. 260 m. 26 lo. 826 cars.
T. A. McKinnon, *Gen. Man*........Montreal, Can.
H. A. Alden, *Supt*........W. Farnham, P. Q.
A. G. Eastman, *M. M*........W. Farnham, P. Q.
South Florida R. R. 3 gauge 40 m. 4 lo. 20 cars
B. R. Swoope, *Supt. & P. A*........Sanford, Fla.
C. C. Haskell, *Pur. Agt*........Sanford, Fla.
J. A. Campbell, *M. M*........Sanford, Fla.
A. D. Stentiford, *M. C. B*........Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, *Supt.* Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 10 lo. 260 cars.
A. H. Fracker, *Gen. Supt*..San Francisco, Cal.
G. H. Waggoner, *Pur. Agt*..San Francisco, Cal.
E. L. Reese, *M. M. & C. B*........Newark, Cal.
South-Western R. R. (Ga.) (*See Central of Ga.*)
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
J. M. Wilson, *Supt*........Harrodsburg, Ky.
J. Tomlinson, *Pur. Agt*........Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 115 m. 16 lo. 447 c.
James G. Knapp, *Supt. & Pur. Agt.* Auburn, N. Y.
Chas. G. Brown, *M. M*........Auburn, N. Y.
H. Mooney, *M. C. B*........Auburn, N. Y.
Southern Maryland R. R. 4-8½ g. 20 m. 1 lo. 5 c.
Robert Knight, *Supt*........Brandywine, Md.
C. R. Joyce, *M. M*........Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 198 m. 30 lo. 728 c.
Northern Div. (*For other Divs. see Cen. Pac.*)
A. C. Bassett, *Supt*........San Francisco, Cal.
J. R. Watson, *Pur. Agt*........Sacramento, Cal.
J. T. Wilson, *M. M*........San Francisco, Cal.
F. N. Bellisle, *M. C. B*....San Francisco, Cal.
Spring Hill & Parrsboro Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. A. Killam, *Gen. Man*........Parrsboro, N. S.
K. McKinnon, *M. M*........Parrsboro, N. S.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt. & Pur. Agt*. Calais, Me.
G. H. Corsen, *M. M*........Milltown, Me.
H. C. Tincker, *M. C. B*........Milltown, Me.
St. John's Ry. 4-8½ g. 14½ m. 2 lo. 24 cars.
R. McLaughlin, *Pr. & Supt*. Jacksonville, Fla.
Geo. Ferro, *M. of Mach*........Tocoi, Fla.
St. Johnsb'ry & Lake Champ. 4-8½ g. 120 m 10 lo. 207 c.
A. B. Jewett, *Supt. & P. A*. St. Johnsbury, Vt.
Geo. E. Howe, *M. M. & C. B.* St. Johnsbury, Vt.
St. Joseph & Des Moines R. R. (*See K. C., St. J. & C. B.*)
St. Lawrence & Ottawa Ry. 4-8½ g. 59 m. 10 l. 146 c.
Archer Baker, *Gen. Supt*........Montreal, Ont.
R. Blackwell, *Mech. Supt*........Montreal, Ont.
St. Louis, Alton & Terre Haute R. R.
Main Line. (*See Ind. & St. L. Div.; Ohio Ry.*)
St. Louis & Cairo Div.: 4-8½ g 137 m. 17 lo. 778 c.
G. W. Parker, *Gen. Man*........St. Louis, Mo.
J. L. Hinckley, *Supt*........Belleville, Ill.
A. M. De Clerq, *M. M*........St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 27 m. 18 lo. 11 cars.
Wm. Taussig, *Gen. Man*........St. Louis, Mo.
A. W. Dickinson, *Supt*........St. Louis, Mo.
J. E. Williams, Jr., *Pur. Agt*....St. Louis, Mo.
H. M. Smith, *M. M*........St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 28 m. 1 lo. 78 cars.
Jas. Prentice, *Supt*........Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt*........St. Louis, Mo.
St. Louis, Ft. Scott & Wichita R.R. 4-8½ g. 128 miles.
F. Tiernan, *V. P. & Gen. Man.* Fort Scott, Kan.
J. W. Miller, *Gen. Supt*........Fort Scott, Kan.
Henry Berger, *M. M*........Ft. Scott, Kan.
A. A. Tiddell, *M. C. B*........Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 85 m. 5 lo. 65 c.
W. W. Walker, *Gen. Supt*........Hannibal, Mo.
Geo. Douglass, *Pur. Agt*........Hannibal, Mo.
St. Louis, Iron Mt. & So'n Ry. (*See Mo. Pacific Ry.*)
St. L. Keokuk & No.-W'n. 4-8½ g. 187 m. 14 lo 312 c.
R. Law, *Gen. Supt*........Keokuk, Ia.
G. B. Harris, *Pur. Agt*........Chicago, Ill.
Wm. H. Bartlett, *M. M*........Keokuk, Ia.
St. L., Salem & Little Rock. 4-9 g. 69 m. 5 lo. 103 c
H. A. Crawford, *V. Pr. & P. A.*..St. Louis, Mo.
E. B. Sankey, *Supt*........Salem, Mo.
Thomas Everson, *M. M*........Steelville, Mo.
J. W. Houston, *M. C. B*........Steelville, Mo.
St. L., Van. & T. H. (*See T. H. & I. Div. of Penna. Co.*)
St. Louis & Cairo R. R. 3 g. 152 m. 22 lo. 896 cars.
Chas. Hamilton, *Gen. Supt*........St. Louis, Mo.
R. M. Pringle, *M. M*........St. Louis, Mo.
St. L. & San Fran. Ry. 4-8½g. 854 m. 80 lo. 2,700 c.
C. W. Rogers, *V. P. & Gen. Man.* St. Louis, Mo.
D. H. Nichols, *Mast. Tran.*..No. Springfield, Mo.
A. G. Thompson, *Pur. Agt*........St. Louis, Mo.
M. Kearney, *M. M. & C. B.*..No. Springfield, Mo.
Mo. & Ark. Div.: W. A. Thoms, *Supt*. do.
Kan. Div.: J. R. Wentworth, *Supt.* Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 2 lo. 8 cars.
A. E. Killam, *Manager*........St. Martin's, N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,125 m. 168 lo. 4,331 cars.
A. Manvel, *Gen. Man*........St. Paul, Minn.
E. B. Wakeman, *Asst. Gen. Supt.* St. Paul, Minn.
J. C. Morrison, *Pur. Agt*........St. Paul, Minn.
H. Middleton, *M. M. & C. B*... St. Paul, Minn.
Breck. Div.: A. Guthrie, *Supt*.. St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt*........St. Paul, Minn.
No'n Div.: D. K. Smith, *Supt*....Crookston, Minn.
St. Paul & Duluth R. R. 4-8½g. 196 m 24 lo. 580 c.
H. P. Breed, *Asst. Gen. Supt*....St. Paul, Minn.
J. G. Callahan, *Pur. Agt*........St. Paul, Minn.
W. McFarland, *M. M*........St. Paul, Minn.
John Hill, *M. C. B*........St. Paul, Minn.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, *Supt*........Sloatsburg, N. Y.
Syracuse, Binghamton & N. Y. R. R. (*See D. L. & W.*)
Syracuse, Ontario & N. Y. 4-8½ g. 44 m. 4 lo. 60 c.
Albert Allen, *Supt*........Syracuse, N. Y.
George W. West, *M. M*........Syracuse, N. Y.
Wm. J. McMichael, *M. C. B*... Syracuse, N. Y.
Syracuse, Geneva & Corning; Corning, Cowanasque & Antrim R. Rs. 4-8½ g. 121 m. 28 lo. 1,044 c.
A. H. Gorton, *Supt*........Corning, N. Y.
W. E. Gorton, *Asst. Supt*........Corning, N. Y.
Andrew Beers, *Pur. Agt*........Corning, N. Y.
O. C. Patchell, *M. M*........Corning, N. Y.
C. J. Butler, *M. C. B*........Corning, N. Y.

T

Terre Haute & So.-Eastern Ry. 4-9 g. 40 miles.
Geo. Atherton, *Supt*........Terre Haute, Ind.
Texas-Mexican; and Mexican National Rys.
3 g. 333 m. 28 lo. 600 cars.
G. C. Gardner, *Gen. Man*....New York, N. Y.
W. E. Lewis, *Supt*........Mexico, Mex.
J. Dougherty, *Pur. Agt*........New York, N. Y.
No. Div.: F. A. Lister, *G. M.*..Corpus Christi, Tex.
P. J. Milan, *M. M. & C. B.* do.
Mex. Nat. Ry.: J. M. Winslow, *M. M.* Mexico, Mex.
Jno. Scullen, *Gen. Man*........Mexico, Mex.
Texas Western Ry. 3 g. 42 m. 2 lo. 34 cars.
E. L. Heriot, *Gen. Man*........Houston, Tex.
J. W. Goodwin, *Supt*........Houston, Tex.
T. F. Glispin, *M. M*........Houston, Tex
Texas & New Orleans; Louisiana W'n R. Rs.
4-8½ g. 217 m. 25 lo. 900 c.
A. N. Towne, *Gen. Man*........Houston, Tex.
P. B. Watson, *Pur. Agt*........Houston, Tex.
C. A. Burton, *Supt*........Houston, Tex.
D. C. Smith, *M. M*........Houston, Tex.
J. M. Mather, *M. C. B*........Houston, Tex.
Texas & Pacific. (*See Mo. Pac. Ry.*)
Texas & St. Louis Ry. 3 g. 304 m. 19 lo. 338 cars.
G. W. Ristine, *Gen. Man*........St. Louis, Mo.
A. L. Horner, *Supt*........Tyler, Tex.
A. S. Horner, *Supt*........Texarkana, Kan.
F. W. Paramore, *Pur. Agt*........St. Louis, Mo.
L. B. Fish, *Pur. Agt*........Tyler, Texas.
G. W. Prescott, *S. M. P. & M*...St. Louis, Mo.
Tioga and Elmira State Line R. Rs.
4-8½ and 6 g. 54 m. 17 lo. 953 cars.
L. H. Shattuck, *Supt*........Blossburg, Pa.
J. A. Hardenburg, *Pur. Agt*.. New York, N. Y.
Pere Bonny, *M. M*........Blossburg, Pa.
D. H. Stratton, *M. C. B*........Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½g. 84 m. 9 lo. 150 c.
J. M. Ashley, *Gen. Man*........Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.* do
C. C. Dodge, *M. M*........Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 465 m. 63 lo. 2,200 c.
E. E. Dwight, *Gen. Man*........Toledo, O.
F. W. Stewart, *P. Agt*........Toledo, O.
L. James, *Supt. Mach*........Toledo, O.
Tho. Robertson, *M. M*........Delphos, O.
Toledo Div.: W. H. Vandergrift, *Supt.;* and
J. G. Clifford, *M. M*........Delphos, O.
C. H. Mead, *Gen. M. C. B*........Delphos, O.
Del. & Cin. Divs.: D. T. Bacon, *Supt*........Cin., O.
L. Parisoe, *M. M*........Dayton, O.
St. Louis Div.: M. B. Mann........Charleston, Ill.
So. Ea'n Div.: A. W. Salter........Dayton, O.
Tonawanda Valley & Cuba R. R. 3 g. 60 m. 6 l. 30 c.
B. C. Williams, *Gen. Man. & P. A.* Bradford, Pa
Jno. Delaney, *M. M. & C. B*........Bradford, Pa.
Toronto, Grey & Bruce Ry. 4-8½g. 191 m 20 lo 446 c.
Edmund Wragge, *Gen. Man*........Toronto, Can.
W. Watson, *Pur. Agt*........Toronto, Can.
David Preston, *M. M*........Toronto, Can.
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres. & Pur. Agt*........Troy, N. Y.
Joseph Crandell, *Supt*........Troy, N. Y.
Z. B. Davis, *M. M*........Troy, N. Y.
R. V. Coon, *M. C. B*........Troy, N. Y.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 28 cars.
J. J. Pharo, *Supt*........Tuckerton N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 10 lo. 214 cars.
Jas. H. Jones, *Supt*........Rondout, N. Y.
Joseph Rush, *M. M*........Rondout, N. Y.
John H. Decker, *M. C. B*........Rondout, N. Y.
Union Pacific Ry. (5 Gen. Divs.)
3 & 4-8½ g. 4,286 m 510 lo. 10,550 cars.
S. H. H. Clark, *Gen. Man*........Omaha, Neb.
Thos. L. Kimball, *Asst. Gen. Man.* Omaha, Neb.
M. H. Goble, *Pur. Agt*........Omaha, Neb.
I. H. Congdon, *S. M. P. & C. D*...Omaha, Neb
John Wilson, *Asst. do*........Omaha, Neb.
(1) Neb. Div.: P. J. Nichols, *Gen. Supt.*.Omaha, Neb.
E. Div.: C. B. Havens, *Supt*........Omaha, N. B.
R. McConnell, *M. M*........Omaha, Neb.
A. M. Collett, *M. C. B*........Omaha, Neb.
St. J. & W. Div.: L. D. Tuthill, *Supt.* St. Joseph, Mo.
E. Sleppy, *M. M*........G. Island, Neb.
Moun. Div.: W. A. Deuel, *Supt.*.Cheyenne, W. T.
J. H. McConnell, *M. M*........N. Platte, Neb.
R. McDougall, *M. M*........Cheyenne, W. T.
(2) Wy. Div.: E. Dickenson, *Gen. Supt.*.Laramie, W. T.
Laramie Div.: E. Dickenson, *Gen. Supt.* do.
T. E. Lewis, *M. M*........Laramie, W. T.
T. A. Davis, *M. M*........Rawlins, W. T.
Wes. Div.: C. E. Wurtelle, *Supt.* Evanston, W. T.
Geo. F. Chapman, *M. M*........Evanston, W. T.
(3) Idaho Div.: W. B. Doddridge, *Gen. Supt.* Ogden, U.
Og. S. L. Div.:
R. Blickensderfer, *Supt*........Pocatello, Id.
W. H. Lewis, *M. M*........Montpellier, Id.
S. L. & W. Div.:
W. W. Ritter, *Supt*........S. Lake City, Utah
U. & N. Div.:
R. Blickensdorfer, *Supt*........Pocatello, Id.
R. Croft, *M. M*........Logan, Utah.
F. Reardon, *M. M*........Eagle Rock, Id.
(4) Col. Cent. Div.: A. A. Egbert, *Gen. Supt.* Denver, Col.
C. C. Div.: P. Toughy, *Supt*........Denver, Col.
F. Meirtsheimer, *M. M*........Denver, Col.
So. Park Div.: G. W. Evans, *A. Supt.*.Como, Col.
F. Meirsheimer, *M. M*........Denver, Col.
(5) Kan. Div.: F. T. Smith, *G. Supt.*.Kansas City, Mo.
K. Val. Div.: J. O. Brinkerhoff, *Supt.* Kan. C'y, Mo.
Jas. Mackenzie, *M. M*........Armstrong, Kan.
Kan. Cent. Div.:
N. T. Kelley, *Supt*........Leavenworth, Kan.
Smo. Hill Div.:
O. H. Dorance, *Supt*........Wallace, Kan.
J. B. Dailey, *M. M*........Ellis, Kan.
United States Rolling Stock Co. 23 lo. 4,834 cars.
A. Hegewisch, *Pres*........New York, N. Y.
C. F. Jauriet, *Gen. M. M*........Chicago, Ill.
W. H. Chaddock, *Pur. Agt*........Chicago, Ill.
Utah Central Ry. 4-8½ g. 280 m.
John Sharp, *Gen. Supt*...Salt Lake City, Utah.
S. H. Hill, *Pur. Agt*........Salt Lake City, Utah.
W. B. Armstrong, *M. M.*.Salt Lake City, Utah.
Peter Reid, *M. C. B*........Salt Lake City, Utah
Utah & Nevada Ry. 3 g. 37 m.
W. W. Ritter, *Gen. Man*...Salt Lake City, Utah.
Robert Anderson, *M. M*...Salt Lake City, Utah.
Utah & Pleasant Valley Ry. 60 m.
G. M. Young, *Man*........Salt Lake City, Utah.
Utica, Ithaca & Elmira Ry. 4-8½g. 120 m. 11 lo. 152 c.
C. R. Fitch, *Supt*........Elmira, N. Y.
C. J. Howe, *M. M. & M. C. B.*.Breesport, N. Y.
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 329 c.
J. F. Maynard, *Gen. Man. & P. A.*.Utica, N. Y.
John Bailey, *M. M*........Utica, N. Y.
David James, *M. C. B*........Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½g. 30 m. 2 lo. 19 c.,
G. B. Stevenson, *Gen. Supt*........Vacaville, Cal.
Valley Ry. 4-8¾ g. 59 m. 10 lo. 317 cars.
J. E. Turk, *Supt. & P. Agt*........Cleveland, O.
Chas. Blanchard, *M. C. B*........Cleveland, O.
Vernon, Greensburg & Rushville R. R. 25 m.
Horace Scott, *V.-Pres*........Greensburg, Ind.
Virginia Midland Ry. (*See Rich. & Dan.*)
Virginia & Truckee R. R. 4-8½ g. 54 m. 17 lo. 375 c.
Carson & Colorado R. R. 3 g. 158 m. 4 lo. 76 c
H. M. Yerington, *Gen. Supt*........Carson, Nev.
R. J. Laws, *Supt.* (C. & Col.)........Carson, Nev.
Hume Yerington, *Pur. Agt*........Carson, Nev.
I. N. Fording, *M. M*........Carson, Nev.
B. F. Lyon, *M. C. B*........Carson, Nev.

W

Wabash, Chester & W'n R. R. 4-8½ g. 42 m. 2 lo. 32 c
J. L. Hinckley, *Gen. Supt*........Chester, Ill
Wabash, St. Louis & Pacific Ry. (3 Gen. Divs.)
4-8½ g. 3,241 m. 598 lo. 17,230 cars.
John C. Gault, *2d V. P*........St. Louis, Mo.
Robert Andrews, *Gen. Supt*........St. Louis, Mo.
R. B. Lyle, *Pur. Agt*........St. Louis, Mo.
Jacob Johann, *Gen. M. M*........Springfield, Ill.
U. H. Kohler, *Gen. M. C. B*........Toledo, O.
(1) Eas'n Div.: J. B. Barnes, *M. M.* Fort Wayne, Ind.
Oh. & Ind. Div.: G. W. Stevens, *Supt.* Ft. Wayne, Ind.
Peru Div.: E. C. Murphy, *Supt*........Peru, Ind.
John McKenna, *M. M*........Peru, Ind.
Cairo Div.: D. G. Moore, *Supt*........Cairo, Ill
W. S. Morris, *M. M*........Carmi, Ill
(2) Middle Div.: R. M. Hemphill, *M. C. B.* Peoria, Ill
Ill. Div.: H. F. Clark, *Supt*........Springfield, Ill.
B. B. Rose, *M. C. B*........Decatur, Ill.
Chicago Div.: E. N. Armstrong, *Supt.* Chicago, Ill
Peoria Div.: F. L. Tomkins, *Supt*........Peoria, Ill
Rant'l Div.: B. F. Mathias, *Supt*........Rantoul, Ill
J. McCarthy, *M. M*........Rantoul, Ill
(3) Western Div.: W. H. Selby, *M. M*...Moberly, Mo
C. S. Buck, *M. C. B*........Moberly, Mo
Missouri Div.: R. S. Miner, *Supt*...Moberly, Mo.
C. B. & O. Div.: J. W. Blanchard, *Supt.;* and
J. S. Hazen, *M. C. B*........Stanberry, Mo
Quincy Div.: F. D. Schermerhorn, *S.*.Quincy, Ill.
Iowa Div.: E. Dresser, *Supt*........Keokuk, Ia
D. Moin. Div.: H. B. Skeele, *Supt.*.Des Moines, Ia
Walla Walla & Columbia Riv. R. R. (*See Ore. Ry.*
Walkill Ry. (*See N. Y., West. Sh. & B.*
Washington, Ohio & West. R. R. 4-8½ g. 52 m. 5 lo. 83 c.
S. M. Brophy, *Supt*........Alexandria, Va.
Edward Dunn, *M. M*........Alexandria, Va.
John Harrison, *M. C. B*........Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 29 m. 3 lo. 26 c.
C. E. Bower, *Supt*........Waynesburg, Pa.
A. M. Kline, *M. C. B*........Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 3 lo. 147 cars.
William Pay, *Supt*........St. Catharines, Ont.
Jas. Taylor, *M. M*........St. Catharines, Ont
Wm. H. Pay, *M. C. B*........St. Catharines, Ont
West End Narrow Gauge Ry. 3 g. 16 m
Rolla Wells, *Supt*........St. Louis, Mo
M. M. Hodgman, *M. M*........Florissant, Mo.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars.
J. B. McGehee, *Pr. & Gen. Supt.* Bayou Sara, La.
J. A. Tilton, *M. M. & C. B*........Bayou Sara, La.
West Virginia, Central & Pittsb'g Ry. 13 m 3 lo. 19 c.
W. E. Porter, *Gen. Supt*........Piedmont, W. Va.
Geo. W. Harrison, *Pur. Agt*...Piedmont, W. Va.
E. W. Lippencott, *M. M. & M. C. B.* Piedmont.
Western R. R. (of Ala.) 5 g. 88 m. 15 lo. 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 203 c.
Cecil Gabbett, *Gen. Man. & Supt*...Mont., Ala.
C. D. Wall, *M. M*........Montgomery, Ala.
F. M. Wade, *M. C. B*........Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt*........Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 157 m. 16 lo. 394 c.
J. M. Hood, *Pr. & Gen. Man*....Baltimore, Md.
R. J. Adair, *Pur. Agt*........Baltimore, Md.
David Holtz, *Mast. of Mach.*.Union Bridge, Md.
J. H. Nussear, *M. C. B*........Union Bridge, Md.
Western No. Carolina R. R. 5 g. 155 m. 6 lo. 36 c.
V. E. McBee, *Supt*........Salisbury, N. C.
Jos. P. Minetree, *Pur. Agt*........Richmond, Va.
G. W. Gates, *M. M*........Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 48 lo. 952 c.
R. A. Anderson, *Gen. Supt*........Atlanta, Ga.
A. B. Bostwick, *Asst. Supt*........Atlanta, Ga.
Pur. Agt........Atlanta, Ga.
John H. Flynn, *M. M. & C. B*........Atlanta, Ga
Wheeling & Lake Erie R. R. 168 miles.
M. D. Woodford, *Gen. Man*........Toledo, O.
O. P. Dunbar, *Gen. M. M*........Norwalk, O.
John Hillhouse, *Div. M. M*........Norwalk, O.
White Water R. R. (*See Ft. W., Cin. & Lou.*)
Wilmington & No'n R. R. 4-8¾ g. 77 m. 13 lo. 148 c.
J. H. Thompson, *Supt. & P. A.*.Coatesville, Pa.
George Rommel, *M. M*........Coatesville, Pa.
Alex. Maitland, *M. C. B*........Coatesville, Pa.
Wilmington & Weldon; Northeastern; S. C. Central; Cheraw & Darlington; Cheraw & Salisbury; and Wilmington, Columbia & Augusta R. Rs.
5 g. 599 miles 70 locomotives 1,120 cars.
R. R. Bridgers, *Gen. Man*....Wilmington, N. C.
J. F. Divine, *Gen. Supt*........Wilmington, N. C.
John Bisset, *M. M*........Wilmington, N. C.
W. H. Day, *M. C. B*........Florence, S. C.
C. R. Clowe, *M. C. B.* (W. & W.). Wilmington, N. C.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 156 c.
P. Innes, *Gen. Man*........Kentville, N. S.
Wm. Yould, *M. M*........Kentville, N. S.
Wm. Grierson, *M. C. B*........Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 49 lo. 1,608 c.
F. N. Finney, *Gen. Man*........Milwaukee, Wis.
E. K. Howes, *Pur. Agt*........Milwaukee, Wis.
W. A. Short, *Supt. M. P. & M.*..Stevens Pt., Wis.
Mil. & E'n Divs.: A. A. Allen, *S.*.Milwaukee, Wis.
Wis., Minn. & S. M. & N. Div.:
W. E. Carroll, *Supt*........Stevens Point, Wis.
Worcester & Nashua; and Nashua & Rochester R. Rs.
4-8½ g. 95 m. 20 lo. 505 cars.
C. S. Turner, *Pres. & G. Man.* Worcester, Mass.
G. W. Hurlburt, *Supt*........Worcester, Mass.
John G. Brady, *M. M. & C. B.* Worcester, Mass.
Worcester & Shrewsbury R. R. 3 g. 3 miles.
Worcester & Somerset R. R. 4-8½ g. 10 m. 1 lo. 4 c.
J. J. Coburn, *Supt*........Worcester, Mass.
G. E. Hapgood, *Pur. Agt*....Worcester, Mass.
Chas. Cleveland, *M. M*........Worcester, Mass.

Y

York & Peach Bottom Ry 3 g. 39 m. 4 lo. 62 c.
S. M. Manifold, *Supt. & Pur. Agt*........York, Pa.
S. J. Williams, *M. M*........York, Pa.
Youghiogheny R. R. 4-9 gauge
Wm. Wilson, *Supt*........Irwin's, Pa.